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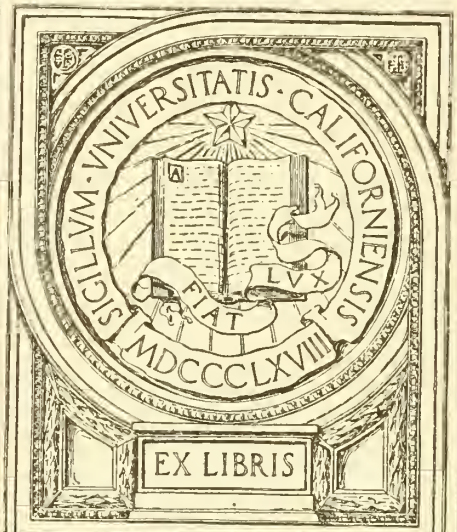

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MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association and Minneapolis Surgical Society.

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PRESIDENTIAL ADDRESS SOUTHERN MINNESOTA MEDICAL ASSOCIATION*

HENRY W. MEYERDING, M.D.
Rochester, Minnesota

Ladies and gentlemen, citizens of Owatonna and fellow members of the Southern Minnesota Medical Association: It has been the custom as well as the privilege of the retiring president to speak to the Association on some subject of interest. I have chosen to present a brief review of the birth, growth and possible future of our society.

Before the days of good highways, automobiles, radios and airplanes, when the means of travel and communication were much more limited than now, a group of physicians of Le Sueur county met in October, 1880, at Le Sueur Center. They were anxious to promote a spirit of fellowship, and, through discussion of professional matters, advance themselves in the knowledge of the art and science of medicine. As a result of this laudable desire, the Minnesota Valley Medical Association was formed a few weeks later with Dr. Otis Ayers, Le Sueur, as president. The annual dues were fifty cents, and the program consisted of case reports from personal experience which were discussed by members and guests, and occasional papers on medical subjects. The association grew, held semi-annual meetings and prospered to the benefit of its members and the communities they cared for.

Twelve years later, July, 1892, physicians practicing along the old Winona and St. Peter Railroad were similarly prompted to organize the Southern Minnesota Medical Association. A meeting was called and about thirty-five physicians were present. The late Dr. H. H. Witherstine of Rochester acted as temporary chairman, and Dr. D. B. Pritchard of Winona as secretary. A committee consisting of Dr. W. T. Adams of Elgin, Dr. W. J. Mayo of Rochester, and Dr. J. B. McGaughey of Winona drew up a constitution and by-laws, which restricted the membership to physicians in good standing who were practicing in the southern counties of Minnesota. The principles and rules of the American Medical Association were adopted and annual meetings decided on. The secretary was instructed to solicit papers from members and the annual dues were made fifty cents.

Dr. Franklin Staples of Winona was the first president; Dr. H. H. Witherstine of Rochester, secretary and treasurer.

A scientific program of five papers elicited great interest and discussion. The subjects were as follows:

1. Cerebrospinal meningitis: Dr. J. B. McGaughey, Winona.
2. Less common forms of surgical tuberculosis: Dr. W. J. Mayo, Rochester.
3. Endometritis with demonstration of new instruments: Dr. W. T. Adams, Elgin.
4. Hypertrophic rhinitis: Dr. H. H. Witherstine, Rochester.
5. Consideration of the knee jerk symptom: Dr. W. M. Phelps, Rochester.

The meetings were held most often at Winona, Rochester, and Owatonna, the county societies entertaining the guests with a banquet. The constitution required that papers be solicited from members, and a review of the secretaries' notes on the contributors shows such names as: Dr. Franklin Staples, Dr. J. B. McGaughey, Drs. W. J. and C. H. Mayo, Dr. A. W. Stinchfield, Dr. H. H. Witherstine, Dr. W. T. Adams, and Dr. J. H. Adair. In a short time the success of these meetings attracted visitors from the surrounding territory. Among the physicians from the Twin Cities, many taking part in the programs, were Dr. James E. Moore, Dr. Burnside Foster, Dr. M. J. Bell, Drs. C. A. and C. L. Wheaton, Dr. A. J. Stone, Dr. J. F. Fulton and Dr. Arthur Sweeney.

So that the names of the officers of the association may be on record I am including the list of

*From the Section on Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota. Read at a popular meeting held at Owatonna, Minnesota, May 18, 1925, under the auspices of the Southern Minnesota Medical Association.

those who, as senior officers, guided the Association through its struggles and achievements.

LIST OF PRESIDENTS AND VICE-PRESIDENTS AVAILABLE

1892

President: Dr. Franklin Staples, Winona
First Vice-president: Dr. N. S. Tefft, Plainview
Second Vice-president: Dr. M. A. Trow, Chatfield

1893

President: Dr. A. F. Kilbourne, Rochester
First Vice-president: Dr. S. H. Van Cleve, Mantorville
Second Vice-president: Dr. R. C. Dugan, Eyota

1894

President: Dr. J. B. McGaughey, Winona
First Vice-president: Dr. S. N. Ransom, Dodge Center
Second Vice-president: Dr. A. S. Adams, Rochester

1895

President: Dr. Charles Hill, Pine Island
First Vice-president: Dr. E. D. Keyes, Winona
Second Vice-president: Dr. T. L. Hatch, Owatonna

1896

President: Dr. N. S. Tefft, Plainview
First Vice-president: Dr. J. H. Adair, Owatonna
Second Vice-president: Dr. C. O. Wright, Luverne

1897

President: Dr. S. W. Ransom, Dodge Center
First Vice-president: Dr. D. B. Pritchard, Winona
Second Vice-president: Dr. R. N. Jackson, Faribault

1898

President: Dr. H. H. Witherstine, Rochester
First Vice-president: Dr. D. A. Stewart, Owatonna
Second Vice-president: Dr. W. N. Kendricks, Austin

1899

President: Dr. J. H. Adair, Owatonna
First Vice-president: Dr. R. C. Dugan, Eyota
Second Vice-president: Dr. E. H. Bayley, Lake City

1900

President: Dr. E. D. Keyes, Winona
First Vice-president: Dr. A. L. Baker, Kasson
Second Vice-president: Dr. J. W. Scott, St. Charles

1901

President: Dr. A. S. Adams, Rochester
First Vice-president: Dr. M. J. Hart, Le Roy
Second Vice-president: Dr. A. B. Stewart, Owatonna

1902

President: Dr. J. P. Waste, Plainview
First Vice-president: Dr. E. H. Bayley, Lake City
Second Vice-president: Dr. D. B. Pritchard, Winona

1903

President: Dr. Christopher Graham, Rochester
First Vice-president: Dr. W. F. Milligan, Wabasha
Second Vice-president: Dr. F. W. Dimmitt, Red Wing

1904

President: Dr. A. B. Stewart, Owatonna
First Vice-president: Dr. C. S. Bigelow, Dodge Center
Second Vice-president: Dr. George Tweedy, Winona

1905

President: Dr. R. C. Dugan, Eyota
First Vice-president: Dr. H. F. McGaughey, Winona
Second Vice-president: Dr. O. F. Way, Claremont

1906

President: Dr. A. L. Baker, Kasson
First Vice-president: Dr. G. J. Tweedy, Winona
Second Vice-president: Dr. M. J. Hart, Le Roy

1907

President: Dr. C. O. Cooley, Madelia
First Vice-president: Dr. F. H. Rollins, St. Charles
Second Vice-president: Dr. George Schulz, Owatonna

1908

President: Dr. O. F. Way, Claremont
First Vice-president: Dr. W. S. Wood, Blooming Prairie

Second Vice-president: Dr. E. M. McLaughlin, Winona

1910*

President: Dr. T. L. Hatch, Owatonna

First Vice-president: Dr. H. F. McGaughey, Winona

Second Vice-president: Dr. J. E. Crewe, Rochester

1911

President: Dr. L. A. Fritche, New Ulm

First Vice-president: Dr. J. E. Crewe, Rochester

Second Vice-president: Dr. H. F. McGaughey, Winona

1912

President: Dr. J. E. James, Mankato

First Vice-president: Dr. W. L. Palmer, Albert Lea

Second Vice-president: Dr. W. E. Browning, Caledonia

1913

President: Dr. A. B. Stewart, Owatonna

First Vice-president: Dr. A. G. Liedloff, Mankato

Second Vice-president: Dr. W. J. Richardson, Fairmont

1914

President: Dr. H. F. McGaughey, Winona

First Vice-president: Dr. J. H. Adair, Owatonna

Second Vice-president: Dr. C. C. Leck, Austin

1915

President: Dr. F. A. Dodge, Le Sueur

First Vice-president: Dr. M. S. Henderson, Rochester

Second Vice-president: Dr. J. L. Williams, Lake Crystal

1916

President: Dr. E. S. Judd, Rochester

First Vice-president: Dr. J. S. Holbrook, Mankato

Second Vice-president: Dr. H. B. Grimes, Madelia

1917

President: Dr. A. F. Schmidt, Mankato

First Vice-president: Dr. W. F. C. Heise, Winona

Second Vice-president: Dr. R. G. Olson, Winona

1918

President: Dr. M. S. Henderson, Rochester

First Vice-president: Dr. A. E. Shmer, Mankato

Second Vice-president: Dr. P. F. Holm, Wells

1919

President: Dr. J. L. Williams, Lake Crystal

First Vice-president: Dr. W. E. Sistrunk, Rochester

Second Vice-president: Dr. W. J. Richardson, Fairmont

1920

President: Dr. H. Z. Giffin, Rochester

First Vice-president: Dr. A. E. Wilcox, Minneapolis

Second Vice-president: Dr. W. J. Richardson, Fairmont

1921

President: Dr. W. J. McCarthy, Madelia

First Vice-president: Dr. E. D. Keyes, Winona

Second Vice-president: Dr. W. R. Ramsey, St. Paul

1922

President: Dr. W. F. Braasch, Rochester

First Vice-president: Dr. W. H. Condit, Minneapolis

Second Vice-president: Dr. G. H. Leudtke, Fairmont

1923

President: Dr. F. P. Strathern, St. Peter

First Vice-president: Dr. C. J. Holman, Mankato

Second Vice-president: Dr. Andrew Gullixson, Albert Lea

1924

President: Dr. H. W. Meyerding, Rochester

First Vice-president: Dr. F. R. Huxley, Faribault

Second Vice-president: Dr. J. S. Holbrook, Mankato.

At the eighth annual meeting, held in Owatonna in 1899, John B. Murphy addressed the society, speaking on "Abdominal surgery and diagnosis." Dr. Murphy emphasized an important point which we should bear in mind, that the responsibility of early diagnosis shall be placed on the general practitioner, who sees the patient early, rather than on the surgeon, who is called late, often too late. Dr. Murphy discussed Dr. Charles H. Mayo's paper, "Some varieties of

*No record can be found of any meeting of the Association in 1909. Financial report seems to indicate there was none, as it combines 1908 and 1910, omitting all reference to 1909.

aneurysms," and Dr. W. J. Mayo's paper, "Gallstones."

As the association gradually became known beyond the borders of the state its membership included many of the best physicians in the States, and they frequently attended meetings, taking part in the discussions. Among these early visitors may be mentioned Ochsner of Chicago and Haggard of Nashville.

In 1911 the Minnesota Valley Medical Association and the Southern Minnesota Medical Association appointed a joint committee to arrange amalgamation and the present organization was formed; thus an infant society was born already endowed with power and destined to surpass any dream of its organizers. This society continued to grow, held biannual meetings, usually of two days' duration, and under the enthusiastic and untiring guidance of Dr. A. F. Schmidt, acting as chairman of the program committee and later Secretary-General, it became nationally known. The large attendance by physicians from near and distant states made the meetings almost top-heavy, and it became necessary to hold them only in the larger cities of this section of the state. With an ever-increasing membership the early enthusiastic support continued to be given to the society. The dues were increased from fifty cents to five dollars. To continue with two meetings a year of two days each with increasing membership would mean the loss of our sectional character; to become part of larger organizations interstate in character was also out of keeping with our ideals of a strong active society acting as a source of knowledge and inspiration to the profession of the southern counties of Minnesota. Therefore, in December, 1923, it was decided by the officers to restrict the meetings to one a year and to one day in duration, to reduce the dues to three dollars and to hold meetings at such a time as would not interfere with the State Society.

This in brief is an outline of the foundation and growth of the Southern Minnesota Medical Association. What of its future? It would be a grave mistake to permit the society to lapse. It has been the means of bringing the recent advances of science and the art of medicine to the medical profession and to the citizens of southern Minnesota. Indeed, it has been a postgraduate school to the busy practitioners who have been unable to attend larger meetings at more distant points.

I believe we have acted wisely by having such meetings as this one tonight open to the public. Certainly it is only through the confidence and the trust of the public that we may look forward to coöperation when much-needed changes in our statutes are sought. The modern physician has no need of secret methods, for, by laying his knowledge before the public, he eliminates a great deal of misunderstanding. Every citizen has a right to a clear exposition of modern medicine and of the ideals and aims of the medical profession. When this has been accomplished, quackery and cultism will have much to explain.

I believe that the holding of two meetings a year, of one day each, beginning at nine in the morning and closing with a banquet at six, will permit the diffusion of the latest advances in medicine and surgery. Thus physicians would be away from home only a short time, and the meetings might be held in smaller towns. In this manner the Southern Minnesota Medical Association might continue as in the past to be a source of stimulation and encouragement to the physician, and of enlightenment for the people of these counties.

PHOSPHATES AND FATIGUE

During the World War, astounding reports were circulated regarding the promotion of muscular activity and the prevention of fatigue in both man and animals through the administration of sodium phosphate. It was attempted, during the war, to increase the muscular efficiency of the German soldier by the oral administration of acid sodium phosphate in sublaxative doses with alleged favorable results. Experiments conducted by the U. S. Public Health Service indicate that the ingestion of acid sodium phosphate does not increase muscular efficiency, but that there is a feeling of well-being experienced by many who ingest the salt. This probably depends on its stimulating action on the intestinal tract, and is due in part to increased elimination of alimentary waste. Acid sodium phosphate (sodium biphosphate) is more pleasant to take than other saline laxatives and is positive in its effects; those subjects who were constipated felt the beneficial effects of this laxative. (Jour. A. M. A., Nov. 6, 1926, p. 1562.)

POST-PNEUMONIC ATELECTASIS*

T. A. Peppard, M.D.
Minneapolis

Communications concerning co-called massive collapse of the lung, recently have been appearing with increasing frequency. Review of *x*-ray records in clinics where routine roentgenological examinations of the chest have been made, reveals not a few instances of this condition hitherto concealed behind the diagnosis of pneumonia, or pleural effusion. This has been our experience at the Minneapolis General Hospital where we have had the opportunity of observing several cases during the past year.

Massive collapse of the lung was defined by W. Pasteur[1] as "total deflation of a large area of lung tissue, of sudden onset, in the absence of any sign of obstruction of the air way or of any known cause of compression, due to failure of inspiratory power and attended by definite physical signs and symptoms." The term massive collapse was considered to set the condition apart as a special type of atelectasis. Although designed to more clearly convey the idea expressed in the above definition, the proper conception often seems quite difficult to attain, because of inattention to the several details. Also that this particular definition is faulty is brought out on considering the arguments set forth in several more recent papers.

Atelectasis is understood to mean the return of lung alveoli, once expanded, to a retracted airless state. It may be met with in stillborn children or in newborn or somewhat older infants. It may arise in adults through any intrinsic or extrinsic interference with the respiratory function.

Hewitt[2] in 1879 describes a patchy collapse occurring in the course of inflammatory lung conditions in children. He considers the term apneumatosis, first employed by Fuchs[3] in 1849, as the most appropriate to express the condition present without involving any theory as to its cause or mode of origin.

Pearson-Irvine[4] in 1876 describes a case of diphtheritic paralysis of the muscles of the upper part of the thorax in which there was collapse of both apices. There was no displacement of the mediastinal contents. He comments on some possible effect of improper functioning of the bronchial muscles as aiding in producing the collapse.

Dixon and Brodie[5] in 1903 were able experimentally to produce either collapse or over-distension of the lung, by varying the force of inflation and the time allowed for deflation when the bronchioles were contracted. In the dog and rabbit bronchiolar constriction followed stimulation of the vagus. Reflex bronchiolar constriction was best obtained by stimulating the nasal mucous membrane. They state also that ether or chloroform anesthesia abolishes the effect of the vagus on the bronchioles. Briscoe[6] stimulated the phrenic nerve and obtained patchy areas of collapse in either lung.

Pasteur first observed lung collapse in certain cases of diphtheritic paralysis and later turned his attention to the condition as it occurred in patients after undergoing abdominal operations. His theory as to the cause of occurrence was that the muscles of respiration failed to function and the portion of lung adjacent to the involved area then emptied itself of air. He considered that the process is quite distinct from that of air absorption from an area of lung with occluded air-way.

Bradford's[7] cases occurred as a result of gunshot wounds, especially those of the chest, although they did not necessarily penetrate the chest wall. The phenomenon of contralateral collapse is commented upon and illustrated. Two cases of lobar pneumonia supervening as a complication of massive collapse were seen, the pneumonia being limited to the collapsed lobe. Further, two typical cases were observed in unwounded men where the condition occurred as a sequel to ordinary pneumonia and where it cleared up completely and rapidly. Bradford also believed the cause to be primarily that of interference with muscles of respiration and cites his reasons for believing it not to be due to obstruction.

Wallgren[8] in 1923 found a shifting of the heart to the involved side in eight cases of pneumonia in children. All recovered.

Two of Gwyn's[9] cases occurred in patients suffering from lobar pneumonia and a third with an acute infection of the respiratory tract, possibly also a pneumonia. All had marked shifting of the mediastinum toward the involved side. Apparently the collapse supervened in one case

*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, August 9 and 10, 1926.

on the nineteenth day, in one on the fourth day and a "few" days (number not specified) in the third. All three of these cases recovered.

Elwyn[10] believes that various sized areas of atelectasis are present quite frequently after operations and that those areas predispose to the development of pneumonia.

Elliot and Dingley[11] (1914) reported eleven cases of post-operative collapse and differed with Pasteur's opinion concerning the mechanism. They believe obstruction of the bronchioles with viscid secretion with subsequent absorption of the retained air to be the cause.

Scrimger[12] (1921) favors obstruction as the cause and reports seven post-operative cases.

Hirschboeck[13] (1922) reported three post-operative cases, with necropsy findings in one in which both lower lobes were collapsed. He believes that limitation of motion favors collection of mucus in the small bronchioles. Either obstruction or limitation of motion may predominate in the individual case. Lee[14] also believes that these two factors combine as a cause.

Churchill[15] in a rather complete paper entitled "Pulmonary atelectasis with especial reference to massive collapse of the lung" states that post-operative massive collapse should be considered only a special manifestation of atelectasis, a condition commonly found in a number of other clinical states. He too believes that bronchial obstruction and weakened respiratory force combine as causative factors.

Jackson and Lee[16] concur in their consideration of these same two etiologic factors. In Jackson's clinic removal of the plugs of secretion by means of the bronchoscope has benefited their patients. They state, however, that obstructive atelectasis due to complete obstruction of a bronchus does not always immediately disappear after removal of the obstruction.

Scott[17] comments on the relative frequency of the post-operative massive atelectasis. Reflex blocking of the finer air passages, possibly of vasomotor origin, is considered by him to be the mechanism of production.

Norris and Landis[18] mention collapse of the lung as a complication of bronchitis and bronchopneumonia and state that its presence is to be inferred largely by an increase in the severity of symptoms.

Rigler[19] has reported a number of post-operative cases occurring at the Minneapolis General Hospital.

SYMPTOMS

The symptoms may vary in severity and, though it probably is true that some cases are symptomless, I have recognized no such instance. As a rule some apparent urgency attends the sudden development of the most frequent dyspnea and cyanosis. The patient may complain of pain and nearly always has some cough; a little later there is some expectoration, sometimes rather profuse, mucoid or mucopurulent in character, seldom bloody unless associated with pneumonia.

PHYSICAL SIGNS

The physical signs of atelectasis occurring as a post-operative complication are generally as follows. The affected side shows a flattening and limitation of motion. Early the tactile fremitus and the breath tones may be diminished or absent but after a period of a few hours (probably 6 to 12) a change may be noted and after this time there is increased fremitus and frank tubular breathing over the involved area. The voice tones are transmitted with increased intensity. The area yields a dull note on percussion. The usual variations in quality and pitch of the percussion and auscultation phenomena as in pneumonic consolidation may obtain. Râles are usually not heard during the early part of the involvement. Later, however, various sized and pitched moist râles are audible. Whenever for any reason the volume of the thoracic content is lessened, the effects observed are (1) deformation of the bony thorax through narrowing of the intercostal spaces; (2) elevation of the diaphragm; and (3) displacement of the mediastinal contents. Any one, two or all three of these phenomena may result from the lung collapse and it is the displacement of the heart toward the affected side that is the most characteristic and suggestive finding. The displacement of the heart may be extreme and the apex may be displaced slightly upward as well as laterally.

COURSE

As a rule the urgency of the complication is short in duration and the patient may after a few hours rest entirely comfortably although the signs are unchanged. The heart returns rather slowly as a rule to its normal position accompanied by clearing of the physical and roentgenological signs. In the pneumonia cases it is the shifting of the heart and mediastinum that is the most striking feature for the other signs may be of no distinctive value.

Elevation of temperature, increased pulse rate and increased respiratory rates are constant accompaniments, as is also a moderate increase in the leukocyte count.

Although the incidence of massive atelectasis is greater in post-operative states than eleswhere, our experience would indicate that it no doubt

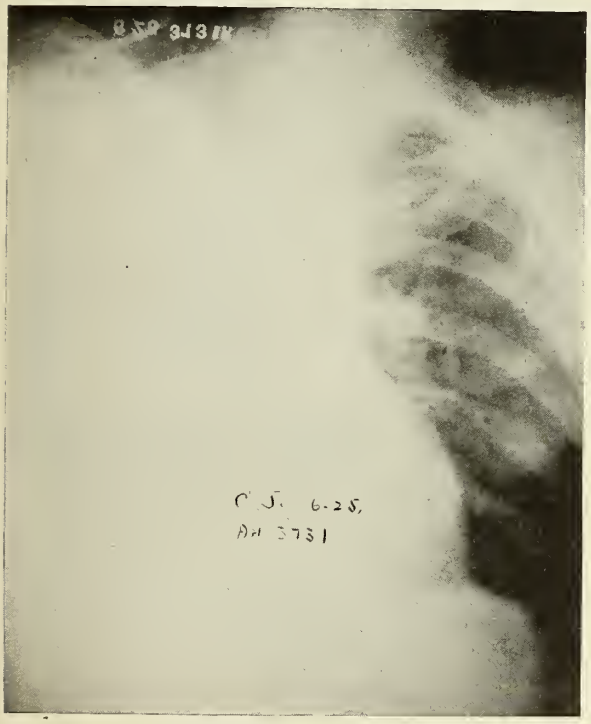

Fig. 1. Case 2. C. J. June 25, 1925. Pneumonia about the fourth day; involvement of the right upper and middle lobes. Note the position of the heart.

occurs as a complication of infection of the respiratory tract. The reports of Wallgren, Bradford, Norris and Landis, and Gwyn confirm this. The diagnosis may be made, as in our first and fourth cases, entirely upon the symptoms, signs and course. However, the roentgenological examination yields valued aid and grateful confirmation.

CONCLUSIONS

(1) Massive collapse of the lung is considered but a special form of atelectasis and might more properly be termed acute massive atelectasis.

(2) The earlier conception that massive atelectasis was due to immobility and retraction of the chest wall and diaphragm has been modified by the addition of the factor of bronchial obstruction.

(3) Massive atelectasis occurs as a complication of pneumonia.

Four cases are presented to illustrate this relationship.

Case 1.—A girl, aged 14, entered the Shriners Hospital For Crippled Children, Minneapolis, March 4, 1925, suffering from an infantile paralysis involving the trunk and lower extremities with deformity of spine and chest. She had had pneumonia at the age of nine months. Infantile paralysis at the age of nine

Fig. 2. Case 2. C. J. July 1, 1925. Immediately following onset of acute symptoms. The heart is displaced toward the affected side.

years had left the patient with a marked scoliosis to the right in the upper dorsal region. The patient was seen March 24, 1924, following an acute onset twenty-four hours before, with nausea, vomiting, chills and fever, headache and cough. The chest was markedly deformed because of the scoliosis. The muscles of respiration were partially inactive. The right thoracic wall was retracted with inspiration and the percussion note was hyperresonant over the right chest anteriorly. Breath sounds were harsh and bronchovesicular in character. Posteriorly there was a dullness over the right lower lobe with bronchial breathing, increased transmission of voice tones and a few fine râles over this area.

On March 25th, the physical findings persisted. The heart was not displaced. The leukocyte count was 16,000, 80 per cent p.m.ns. Urinary chlorides were diminished. Pnemococci, type 1, were found in the sputum. The blood culture was negative.

On March 26th, a friction rub was heard over the lower right chest and after a period of six days there was evidence of the process undergoing resolution. On April 2nd, ten days after the onset of the acute ill-

ness, her temperature was reported increased. The patient was breathing with increased rapidity, coughing and obviously not as well as she had been. On examination the right chest was found to be dull over its entire extent anteriorly and definite tubular breathing was heard over the area of the upper lobe. There was bronchial breathing and increased transmission of spoken voice sounds. The temperature which had been

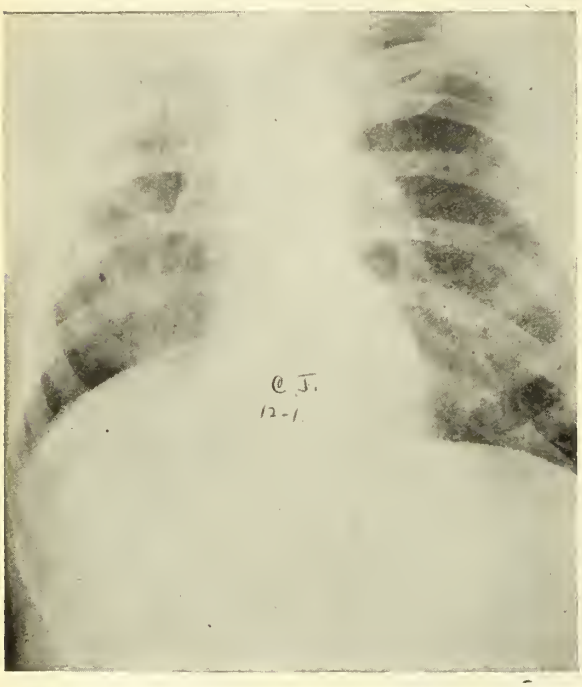

Fig. 3. Case 2. C. J. Plate taken after some months showing the normal heart position in this patient.

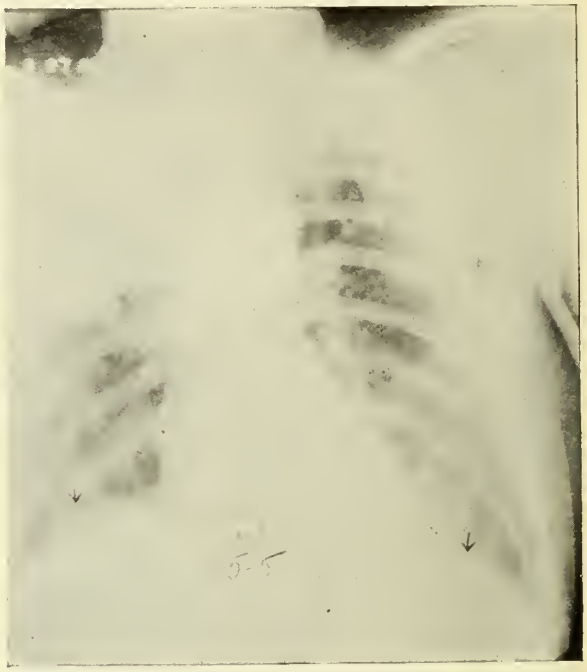

Fig. 4. Case 3. M. F. May 5, 1925. Pneumonia in the right upper lobe.

between 99-100 was increased to 100.6. The urinary chlorides, at first greatly diminished, had returned to normal with her improved condition and were now not changed with this new involvement. The leukocyte count again increased to 15,000, 21,000 and 22,000. In spite of the fever, the increased respiratory rate and leukocytosis, she did not appear to be as ill as a patient who is having such an extension of pneumonia. In addition to the above noted physical signs it was observed that the interspaces over the right upper chest were markedly retracted and that the heart was displaced a distance of about 2.5 cm. toward the involved area. These findings remained rather marked for a five-day period, when they gradually subsided, and the heart gradually resumed its normal position in the chest.

Case 2.—C. J., a laborer, aged 52, entered the Minneapolis General Hospital June 24, 1925. He had had an attack of pneumonia in 1887 and again in 1898 and another acute infection of the respiratory tract in 1902. For three weeks prior to admission the patient had had some chest pain, cough, expectoration, fever, sweating and general weakness. Three or four days before entering the hospital the sputum, which had previously been clear, had become blood tinged and he had moderate dyspnea.

Examination showed evidence of weight loss, the skin flushed but without marked cyanosis. Examination of the chest showed the size and position of the heart to be normal. Movement of the right chest was greatly diminished. There was an increased tactile fremitus and the impaired percussion note over the entire right chest anteriorly and posteriorly, the breath tones being bronchial in character in the right chest anteriorly and posteriorly above the level of the fourth thoracic spine. Over the remainder of the right chest behind, the breath tones were diminished in intensity. There was increased transmission of the spoken voice over the area of involvement. There were many fine and medium coarse moist râles over the entire right chest. The patient's temperature ran not higher than 101.6 until the fourth hospital day, when it reached 102.6 and remained at this height for 36 hours. The pulse rate varied from 100 to 120 and, coincident with the rise in temperature, increased to 130. The leukocyte count on admission was 8,000 with 78 per cent p.m.ns.

On June 28th, his fourth hospital day, he complained of some pain in his chest, he was apparently much weaker and his lips were very cyanosed. He was raising a considerable quantity of blood stained sputum. On his fifth hospital day his condition was not at all improved. The sputum was increased in amount. On the sixth day his condition was still serious. On July 2nd, the eighth hospital day, the leukocyte count was increased to 21,000. The patient was very ill, cyanotic and irrational at times.

An *x*-ray plate taken on the day of admission showed a dense shadow involving the entire right lung field, somewhat more clear at the apex, in the medial portion and just above the consolidation. In this plate the

heart is seen to occupy approximately a normal position. On July 1st, because of the patient's changed physical signs, namely a note of impaired tympany over the right chest anteriorly and also because the heart borders could not now be determined, a second plate was taken and this showed the consolidation as before with the exception that the interspaces were narrowed on the right side and that the heart and trachea were displaced very markedly to the right. There then seemed to be two distinct processes, the one an infectious consolidating process and the other a collapse, or atelectasis, bringing about a mediastinal displacement.

Subsequent plates taken at intervals during the months of July and August showed the heart gradually assuming its normal position in the chest and the lungs becoming more and more air bearing. There remained for some time an area of density in the upper portion of the right lung field but this on subsequent examinations gradually became less and less dense. The patient had fever for a period of approximately four weeks, after which time his temperature remained normal up to the time of his discharge from the hospital on the 29th of August.

Case 3.—M. F., housewife, aged 60, was admitted to the Minneapolis General Hospital May 5, 1925. Her previous history was of no importance. The week before admission she had some infection of the face which was diagnosed as erysipelas. She had a fever and was confined to her bed. The day before her admission she complained of some pain in her epigastrium and the physician discovered some physical signs in the right chest and referred her to the hospital.

On examination she was found to have some dyspnea and the chest showed limited movement on the right side. There was increased tactile fremitus over the right upper lobe anteriorly and posteriorly. The percussion note was dull over this area and the breath tones were bronchial in character and there was increased transmission of spoken voice. Elsewhere in the chest there was normal resonance and vesicular breath tones. The size, shape and position of the heart were entirely normal. The temperature varied between 101 and 103, the pulse rate from 100 to 120 and the respiration was 30. The leukocyte count on admission was 12,000; later this increased to 30,000 with 90 per cent p.m.ns. The blood culture showed no growth.

An *x*-ray plate on the day of admission showed a dense shadow involving the right upper lobe extending down to the third rib. The process appeared to be confined to the right upper lobe. A diffuse haziness of the right and left lung bases suggested possibly a beginning pneumonia.

On May 6th (the second hospital day) the consolidation which was present in the right upper lobe had apparently extended through the entire lung field. At this time on physical and *x*-ray examination the heart previously in normal position, was found displaced far to the right. This change is illustrated in Figure 5. The right diaphragm was higher than before. The less dense shadow noted in the left lower lobe remains as before.

On May 11th (the sixth hospital day) the shadow at the right base had decreased a great deal in density, that in the upper lung field being still very dense. There was then a large shadow extending out from the left hilus toward the periphery. On May 13th, the process had extended so that the whole left lung was involved. During the first five or six days the patient's general condition was fair; but on the eighth hospital day she became very much worse with increasing cyanosis, increase in the pulse and respiration and

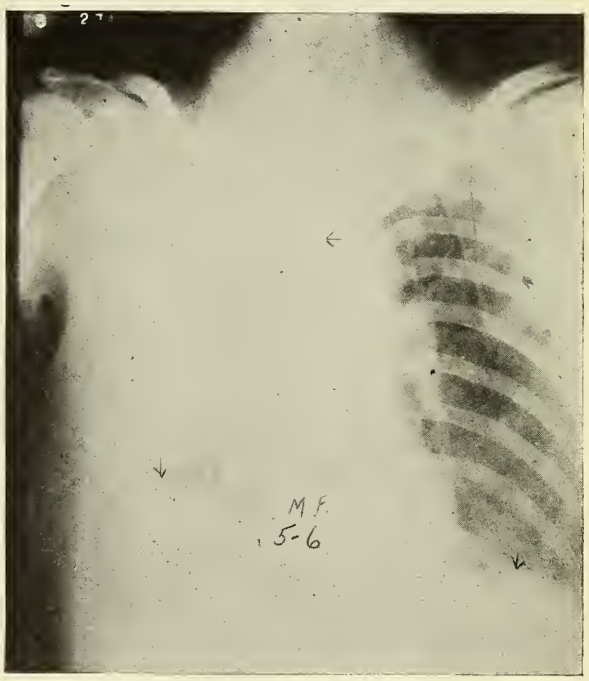

Fig. 5. Case 3. M. F. May 6, 1925. Day following admission. Plate taken twenty-four hours after that shown in Fig. 4. Extension of pneumonia and collapse, illustrating mediastinal displacement toward affected side and diaphragm displaced upward.

decrease in temperature. She died on May 14th, after an observation period of nine days. No autopsy was secured.

Case 4.—F. S., aged 13, had had, over a period of years, numerous attacks of infections of the respiratory tract and also numerous attacks of dyspnea occurring from time to time. The patient had no pulmonary tuberculosis.

On February 26, 1926, the patient was seen at his home, complaining of cough and expectoration. There were no important physical signs in the chest.

On February 27th, he developed a fever of 100 and this day complained of pain in his chest, cough and some difficulty in breathing. He was seen by an assistant, who reported that the heart was well over in the right hemi-thorax.

On February 28th, I examined the patient and found the heart, which had previously been determined by *x*-ray and physical examination to be in normal position, greatly displaced into the right chest. The diaphragm stood high and performed a very limited excursion. Over the area of the right upper lobe, the percussion note was dull and over this area of dullness there were hard outspoken bronchial breath tones. The trachea was displaced to the right. The lower

and middle lobes were uninvolved. Diagnosis: broncho-pneumonia and massive collapse of the right upper lobe. The patient's temperature became normal after three days. The mediastinal contents gradually assumed their normal position and recovery was uneventful.

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SCARLET FEVER TOXIN

Nicolle, Conseil and Durand, in Tunis, have recently described the development of scarlet fever in a person inoculated with the fourth subculture of a streptococcus isolated from the throat of a scarlet fever patient. This work is regarded by the investigators as confirmatory of the discovery by the Dicks that a specific streptococcus is the cause of scarlet fever. It emphasizes also the value of the later report of the Dicks of the intradermal injection of streptococcus toxin, the "Dick Test," as a means of determining susceptibility to scarlet fever. (Jour. A. M. A., Nov. 20, 1926, p. 1746.)

THE VALUE OF BRONCHOSCOPIC EXAMINATIONS TO THE INTERNIST AND THE SURGEON*

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During the year 1925, 105 patients examined in the Mayo Clinic required bronchoscopic examination. In all, 122 such examinations were made, and foreign bodies were found in seven instances. Six of these cases presented no particular points of interest and will not be included in the limitations of this paper. One has been included because of special interest in connection with the diagnosis. These examinations were decided on for four reasons: (1) to allow for greater precision in diagnosis; (2) to establish the surgical indications; (3) to allow for direct local treatment, and (4) to clarify clinical impressions as to the cause of certain familiar symptoms in diseases affecting the lungs and bronchi.

Bronchoscopic examination can be made without any distressing symptoms and even when patients are very ill. The average examination requires not more than five minutes and can be made easily under local anesthesia. The larynx, pharynx and bifurcation of the trachea are anesthetized with a 20 per cent solution of cocain. In none of our cases was general anesthesia used. Except in the case of a very sick patient, preoperative preparation and postoperative treatment are entirely unnecessary and admission to the hospital is not usually required. The patient is instructed to abstain from food or drink on the morning of the examination and, in cases of bronchiectasis, it is suggested that the bronchi be emptied by postural drainage before bronchoscopy. There is no postoperative reaction.

The proximally illuminated bronchoscope of the Bruning type is preferable to the distally lighted tube, as the light is reflected farther into the bronchi and a more complete examination can be made in a shorter time.

*From the Division of Medicine and the Division of Surgery, Mayo Clinic, Rochester, Minnesota. Read before the Canadian Medical Association, Victoria, British Columbia, June 21 to 25, 1926. Also read before the Northern Minnesota Medical Association, Crookston, August, 1926.

Ninety-nine patients under consideration have been grouped in four divisions, and illustrative cases have been chosen to represent not only each major division, but also the several subdivisions into which it may be divided:

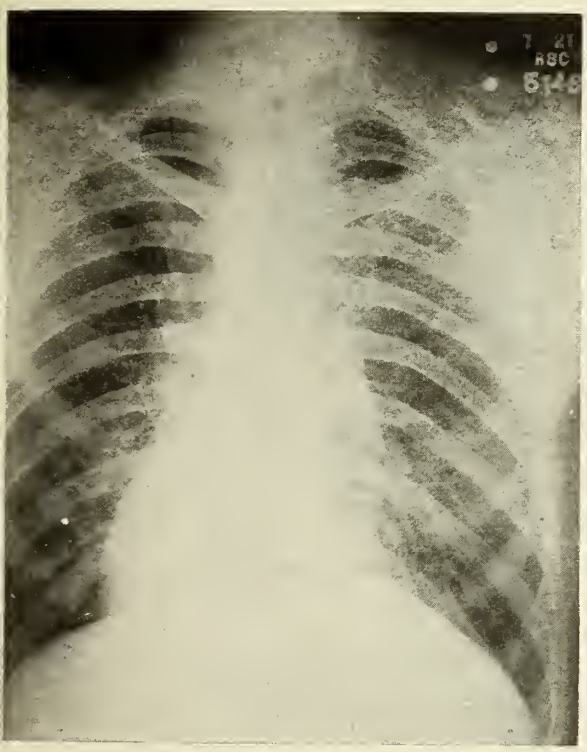

Fig. 1. Bronchiectasis of the left lung with negative x-ray findings.

I. Suppurative disease
   1. Unilateral bronchiectasis with hemorrhage; no physical findings
   2. Bilateral bronchiectasis with purulent obstruction; physical findings of stenosis
   3. Unilateral bronchiectasis; site undetermined by physical examination
   4. Bilateral bronchiectasis; physical findings on left side only
   5. Bilateral bronchiectasis with hemorrhage; physical findings on right side only
   6. Inflammation of hilus; history of pulmonary abscess
   7. Unilateral bronchiectasis from aspiration of foreign body; simulation of tuberculosis
   8. Bronchial suppuration after aspiration of water

II. Pulmonary calculus

III. Chronic infection
   1. Chronic ulcerative tuberculous bronchitis
   2. Stricture associated with pulmonary tuberculosis
   3. Gumma of bronchus

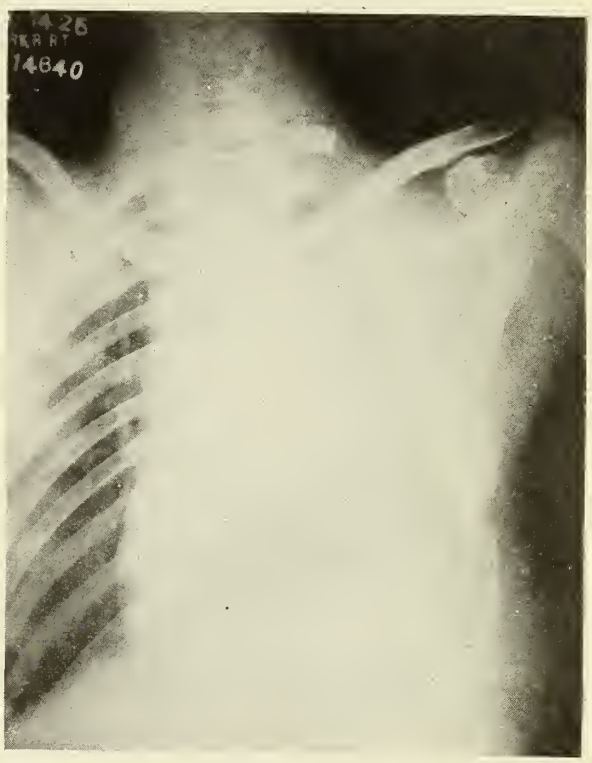

Fig. 2. Roentgen-ray findings after compression of the left lung following thoracoplasty.

IV. Neoplasm
   1. Benign tumor
   2. Malignant tumor

I. SUPPURATIVE DISEASE

1. UNILATERAL BRONCHIECTASIS WITH HEMORRHAGE; NO PHYSICAL FINDINGS

Illustrative case.—A man, aged twenty-six, came to the clinic for examination July 20, 1925. For two years he had had occasional morning cough. Six months previously, he had coughed up a small clot of blood. Since then, he had coughed up blood-streaked sputum three or four times a week. Hard work would bring on bleeding, and several times in the two weeks previous to examination he had coughed up 30 c.c. or more of blood at a time. Morning cough productive of small amounts of sputum was habitual. He complained of a dull pain in the anterior left lower portion of the chest, increased on deep breathing. He tired easily and had lost 5 or 6 pounds in weight, although the course remained afebrile throughout. The roentgenologic and physical examinations of the chest were negative (Fig. 1). Examination of the sputum was negative for bacilli of tuberculosis and for elastic tissue.

A bronchoscopic examination was made soon after an active hemorrhage, and there was bloody mucus in

the trachea, extending into the lower lobe of the left lung, whose lower bronchi were seen to be dilated. No definite pus was seen but the lesion was identified as bronchiectasis. Since no evidence of disease could be found in the right lung, compression of the left lung by thoracoplasty seemed advisable (Fig. 2).

The final diagnosis was unilateral left bronchiectasis with hemorrhage; the primary diagnosis was probable bronchiectasis; the physical findings were negative.

Comment.—The characteristic feature of the cases in this subdivision is the fact that hemorrhage is very common. Moreover, hemorrhage may be the only clinical evidence that the lungs are definitely affected. Bleeding is influenced by exertion and may appear for months or even a year before clinical signs become apparent. These cases illustrate most forcibly how much more common bronchiectasis is than our former teaching has led us to believe, and that it may be present even though all other means except the bronchoscopic examination fail to disclose it. Hemorrhage is more common in bronchiectasis than in any other disease of the lung. In the case described, no definite pus was located, but by means of the bronchoscope a diagnosis was possible because of the visual evidence of dilated, stiffened bronchi, whose movements during inspiration and expiration were limited.

2. BILATERAL BRONCHIECTASIS WITH PURULENT OBSTRUCTION; PHYSICAL FINDINGS OF STENOSIS

Illustrative case.—A woman, aged sixty-three, came to the clinic for examination October 9, 1925. She had had pneumonia thirty-five years previously and frequent pleuritic pains in the chest, particularly on the left side. There had been a recurring cough for thirty years and twenty-five years before admission she began bringing up thick, purulent, blood-stained sputum. Blood had been expectorated frequently during her illness. There was never any large amount of sputum or blood. The cough had increased in the previous three years and during the last year the patient was very weak and unable to work. For two or three years she had had chills and fever, as high as 102 or 103°, about every six weeks. Because of malaise, fever, cough, purulent sputum and hemoptysis, she had been treated for tuberculosis. There had been a loss of 30 pounds in twenty years, but her weight had been stationary for the two years previous to the examination.

Examination revealed limited but fairly equal expansion of the chest, and the note was hyperresonant throughout, with diminution of breath sounds over the left side and absence of such sounds over the left lower lobe. There were coarse moist râles throughout the areas of audible sounds. Roentgenologic examination of the chest showed pleuritic adhesions at both the right and the left diaphragms and rather marked bronchial thickening in both lower lobes, suggestive of bronchiectasis.

Bronchoscopic examination showed the trachea and bronchi to be covered with a large amount of very thick pus. The secretion was aspirated from the bronchi, after which the breath sounds were audible over the left lower lobe. The patient's frailty and consequent inability to free the bronchi of the thick tenacious sputum had produced bronchial obstruction, as evidenced by physical signs. The absorption of retained secretion, and bronchopneumonia, produced by reinfection and aspiration, had caused the acute illnesses referred to in the history. One month later, the patient was reported to be markedly improved following the bronchoscopic aspiration of secretions.

The final diagnosis was bilateral bronchiectasis, and obstruction of the left bronchus by heavy pus. The primary diagnosis was probable bilateral bronchiectasis with indeterminate obstruction of the left bronchus.

Comment.—In this case it would seem that the progressive asthenia had exaggerated a stagnation of secretion within the bronchi to such an extent that air could no longer enter the obstructed side. Such a cause for bronchial obstruction is not at all uncommon and may be a temporary finding in large numbers of cases of typical bronchiectatic disease. The more robust patients, not having lost their ability to clear the lungs of obstruction, may, by various expedients such as gravity, free themselves of the obstruction.

It follows, then, that patients who apparently have no air entering one of the lower lobes, may, within a few minutes following cough, have classical signs of chronic pulmonary disease and on many occasions the evidence of multiple cavitation. The type of sputum, again, may change from time to time as in the case described, in which for many years the sputum had been purulent and blood-stained, even though it had never been profuse or malodorous. With the onset of extreme asthenia, the cough became persistent, ineffectual, irritating, and nonproductive. The bronchoscopic examination revealed the presence of thick, tenacious mucus blocking the left bronchus; this explained exactly the mechanism that had produced the signs found on physical examination. Sputum of this character is, again, not unusual in early cases of bronchiectasis, secondary to sinus disease. In these instances, the bronchoscopic examination shows evidence of a thick secretion that may be described as mucopurulent or purulent with tenacious flecks covering the mucosa of the bronchi.

3. UNILATERAL BRONCHIECTASIS; SITE UNDETERMINED BY PHYSICAL EXAMINATION

Illustrative case.—A woman, aged thirty-nine, came to the clinic July 28, 1925. She had been well until three years previously, when she had had pneumonia; she was in bed for eleven weeks and had brick-dust, tenacious sputum. She had had a cough ever since, especially in spells, and foul breath. The cough was productive of greenish sputum often mixed with blood. In February and July, 1925, there had been definite pulmonary hemorrhages, preceded by a feeling of chilliness, and fever of 102°. Before the hemorrhages, there had been generalized aching pains. Following the bleeding, the temperature returned to normal for a week, when it rose and remained stationary at 99.3°. There had been no loss of weight.

Physical examination of the chest was negative. The roentgenogram of the chest showed a healed lesion, suggestive of tuberculosis, in the upper lobe of the right lung. The sputum was negative for bacilli of tuberculosis. The leukocytes numbered 7,500.

Bronchoscopy showed evidence of bronchiectasis of the lower lobe of the left lung.

The final diagnosis was unilateral bronchiectasis, left lower lobe. The primary diagnosis was bronchiectasis.

Comment.—The surgical indications are dependent on the extent of the disease and the disability of the patient.

4. BILATERAL BRONCHIECTASIS; PHYSICAL FINDINGS ON LEFT SIDE ONLY

Illustrative case.—A woman, aged twenty-two, came to the clinic August 24, 1925. She had had influenza five years previously and since that time had had a chronic productive cough. Changes of position caused her to have violent paroxysms of coughing productive of foul-smelling pus. She had had numerous nasal operations without relief.

Examination of the chest was negative save for a few musical râles over the lower lobe of the left lung. Roentgenograms of the chest showed characteristic markings of bronchiectasis of the lower lobe of the left lung. The sputum was negative for bacilli of tuberculosis.

The bronchoscopic examination revealed large amounts of purulent secretion from the bronchi on both sides. Postural drainage was advised.

The final diagnosis was bilateral bronchiectasis. The primary diagnosis was bronchiectasis of the left lower lobe.

Comment.—This case history records the common symptoms and signs that have been accepted as diagnostic of bronchiectasis. This type is of particular importance, however, because without the bronchoscope the surgical indications are not at all clear. Knowing that the disease is bilateral, the surgeon is much less inclined to perform a tedious and multiple-stage operation, and would not do so unless one side were much more diseased than the other and the condition such that the patient could no longer take his place in society.

Influenza is a common precursor of bronchiectasis, probably because of the damaging intrinsic effect on the bronchial wall. Six months or a year following each epidemic of influenza, large numbers of patients have been seen with bronchiectasis. It is as important an etiologic factor as whooping cough or measles is in childhood, or sinusitis in later years.

5. BILATERAL BRONCHIECTASIS WITH HEMORRHAGE; PHYSICAL FINDINGS ON RIGHT SIDE ONLY

Illustrative case.—A woman, aged fifty-five, came to the clinic June 17, 1925. She had had an infected tooth extracted and an operation performed on her upper jaw four years previously. Two days later she experienced a mild illness diagnosed as influenza, characterized by fever, headache, and general lassitude, and was in bed for one day. Two weeks later there were several profuse pulmonary hemorrhages. Following this, there was a slight cough with a small amount of green sputum. In July, 1923, there was a little bloody sputum, and in December several severe hemorrhages, more than 1,000 c.c. of blood being lost in one night. In May, 1924, and again in February, 1925, other hemorrhages had occurred.

Examination of the chest was negative save for a few moderately coarse râles over the middle lobe of the right lung. The sputum was negative for bacilli of tuberculosis and the roentgenologic examination of the chest was negative.

Bronchoscopic examination showed thick pus coming from the bronchus of the left upper lobe and from all bronchi on the right side. No operative treatment was instituted.

The final diagnosis was bilateral bronchiectasis with hemorrhage. The primary diagnosis was probable inflammatory lesion in the middle lobe of the right lung.

Comment.—This subdivision is included because of the anatomic distribution of the disease. Bronchiectasis in association with tuberculosis of the upper lobe is not unusual and is frequently found in association with chronic phthisis. This particular group illustrates the fact that it may likewise be present in cases in which there is no demonstrable tuberculosis. Aside from these general considerations, however, it is an important group because it illustrates again that bronchiectasis may be present when the sputum is not at all profuse and when the presence of hemorrhage is an outstanding symptom.

6. INFLAMMATION OF HILUS; MISLEADING HISTORY OF PULMONARY ABSCESS

Illustrative case.—A woman, aged twenty-six, came to the clinic for examination September 3, 1925. In June, 1922, tonsillectomy and a septum operation had

been performed under general anesthesia; fourteen days later a severe cough appeared, which produced thick yellowish, odorless sputum. In October, she coughed up three mouthfuls of blood. She remained in bed for three months. Just previous to her admission, she had been short of breath and required three pillows under her head at night.

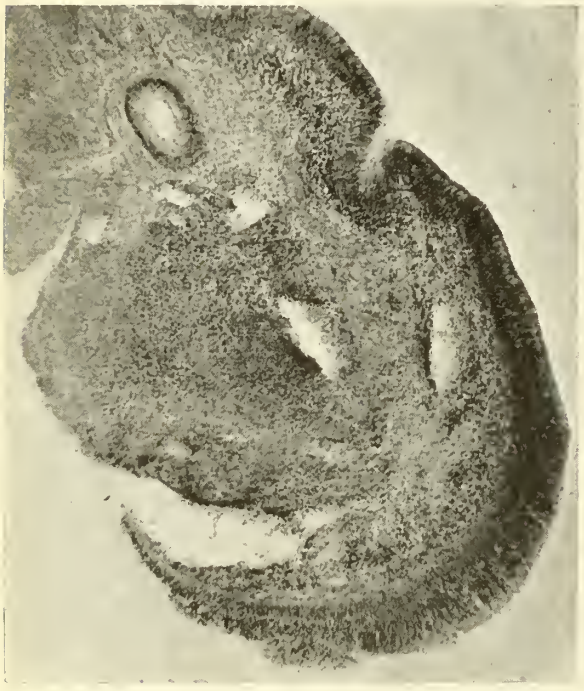

Fig. 3. Photomicrograph of tissue removed which proved to be inflammatory.

Fig. 4. Gross specimen removed at necropsy showed marked infiltration with inflammatory tissue and obstruction of both main bronchi.

Examination of the chest revealed evidence of a thickened pleura at the right base with compensatory emphysema throughout both lungs. Roentgenologic examination revealed thickened pleura at the right base. Examination of the sputum for bacilli of tuberculosis was negative.

Bronchoscopic examination showed considerable blood in the trachea, and in the right bronchus at the bifurcation there was a granular mass which bled easily and appeared to be malignant, but on microscopic examination of a specimen it proved to be inflammatory tissue only (Fig. 3). On two other occasions the bronchoscope failed to reveal any malignant change. Ten days after the last bronchoscopic examination, the patient succumbed to acute pulmonary edema.

Necropsy revealed bronchiectasis in the lower lobe of the right lung and chronic inflammatory tissue around the bifurcation of the trachea with obstruction to both main bronchi (Fig. 4). There was evidence of tuberculous disease in the base of the left lung and marked edema and congestion of both lungs.

The final diagnosis was inflammatory lesion of the hilus with right bronchial obstruction. The primary diagnosis was residual infection from lung abscess.

Comment.—The history in this instance is the one that is commonly diagnostic of postoperative abscess of the lung. It illustrates how such incompletely drained abscesses, if persisting for a considerable time, cause fibrotic changes within the neighboring lung tissue with consequent bronchial dilatation, so that finally a metamorphosis is effected, the abscess disappearing and bronchiectasis remaining. If the pathologic process resulting in abscess is essentially one of necrosis, then that producing bronchiectasis is essentially fibrotic. The case also illustrates the difficulty that is sometimes seen even during bronchoscopic examination in distinguishing between an inflammatory lesion and one due to malignant disease. The acute pulmonary edema that caused death in this case was the result of the very great narrowing of the main bronchi on both sides and of the great muscular effort required to ventilate the lung sufficiently. It is the only instance that we have seen in which, even when the gross pathologic changes were under observation, there was a question as to diagnosis. The hilus areas of both sides were included in a dense mass of fibrous tissue which by compression had almost obliterated the lumen of the main bronchi.

7. UNILATERAL BRONCHIECTASIS FROM ASPIRATION OF FOREIGN BODY; SIMULATION OF TUBERCULOSIS

Illustrative case.—A woman, aged thirty-one, came to the clinic January 20, 1925, giving a history of an impacted wisdom tooth having been extracted under local anesthesia in April, 1923. During the operation she had felt something in her throat and attempted to direct the operator's attention to it. She did not cough and as she felt well after the extraction she dismissed the observation from her attention. There were no symptoms of illness until April, 1924, when, following the uneventful extraction of another tooth, she expectorated a little purulent material in the mornings, without cough. She thought the pus came from the toothsocket but the wound had healed completely. Roentgenograms of the sinuses were taken, with negative results. Purulent material was present for four months and then disappeared, but later the patient complained of lassitude. In January, 1925, she contracted a "cold" with pleurisy on the right side, accompanied by fever. Sputum containing streaks of blood appeared once, completing a clinical picture suggestive of pulmonary tuberculosis and requiring treatment in bed. Because no improvement occurred, she was sent to Colorado for ten weeks, and while she was there the cough ceased, but fever, fatigue and rapid pulse persisted. She returned home and was in bed until July, 1925, when she was permitted to be up for a month, but because of fever and increased density in the right lung, visible on roentgenographic examination, she was sent back to bed. She spat up a small amount of blood October 11. It was finally concluded that the diagnosis was unilateral bronchiectasis, and bronchoscopy was advised.

Nothing definite was found on examination of the chest. At one examination crackling râles could be heard in a localized area in the right axilla. Roentgenograms showed a small area of consolidation in the right lower lobe and interlobar effusion. Further roentgenologic reports indicated some improvement; marked improvement; infiltration in the lower lobe of the right lung, probably old pneumonia; negative, and so forth. Examination of the sputum for bacilli of tuberculosis and elastic tissue was negative.

Bronchoscopic examination revealed a small granuloma on the mesial aspect of the right main bronchus, almost at the bifurcation. A tiny tip protruded; the forceps were applied and a piece of bone was removed (Fig. 5). An uneventful convalescence followed.

The final diagnosis was unsuspected foreign body in the bronchus. The primary diagnosis was bronchiectasis in the lower lobe of the right lung.

Comment.—There were very many difficulties in arriving at a conclusion regarding the exact cause of the disability. As in many instances of chronic suppuration, the possibility of tuberculosis as a causative factor was considered and finally disposed of because of the history of progress and the reaction under treatment. The case illustrates the fact that a foreign body may remain in the lung for a long period before producing reaction indicative of its presence. We have seen an instance of a foreign body, a piece of wood 2.5 by 0.5 by 0.5 cm., remain in the lung for ten years before finally producing signs of its presence in the formation of an abscess. This particular foreign body was extracted when it became necessary to drain a pulmonary abscess through a surgical incision. The case presented here is also of very great interest from the standpoint of the roentgenologic localization of a lesion in the neighborhood of the interlobar sputum. Roentgenograms had been made repeatedly and were outspokenly negative when they were taken in the ordinary anteroposterior direction. When, however, the patient was placed in the lordosis position and the chest skiagraphed, the area of involvement was easily seen and in a position that exactly corresponded to the signs that were heard at the onset of the disease. The case illustrates also the fact that has been demonstrated on a number of occasions, that the removal of such a foreign body through the bronchoscope is followed by prompt cessation of symptoms and return to good health.

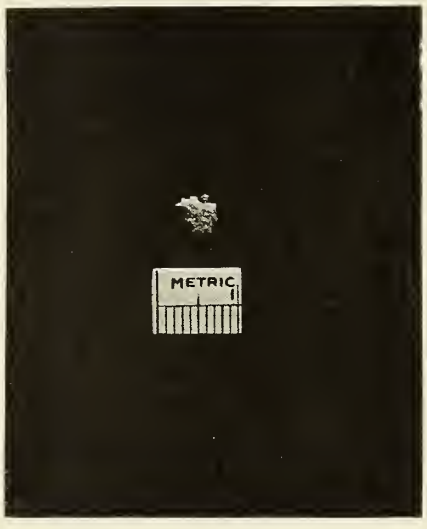

Fig. 5. Tiny piece of bone removed from right bronchus at bronchoscopy.

8. BRONCHIAL SUPPURATION AFTER ASPIRATION OF WATER

Illustrative case.—A woman, aged twenty-two, came to the clinic July 10, 1925. One month previously, while swimming, she had been held under the water. She strangled and aspirated water into her lungs. Two days after this she began to have paroxysms of nonproductive cough, lasting from five to ten minutes and coming on every half hour. She felt weak and tired and the temperature rose to 100°. After a week she

went to bed, and three days later cough became productive of purulent sputum, amounting to from 60 to 120 c.c. a day. The sputum had a foul odor but contained no blood.

Examination of the chest showed evidence of moisture in both bases, more marked on the left side. Roentgenograms of the chest were negative, and no bacilli of tuberculosis were found in the sputum.

Bronchoscopic examination showed the left bronchus filled with pus. There was no foreign body identified. The secretion was aspirated and ten days later a second aspiration was done, which was followed by prompt and complete recovery.

The final diagnosis was left pulmonary suppuration following aspiration of water. The primary diagnosis was pulmonary infection with questionable foreign body.

Comment.—This subdivision represents the acute cases of bronchiectasis, and the symptoms and findings are characteristic of those due to aspiration of fluids. It may be contrasted with subdivision 7. We have seen instances in which irritating fluids have been aspirated into the lung and in which the pathologic changes developed to the degree of damage done. Actual abscess of the lung may occur if the aspirated fluid is of a very irritant character and in one of these cases the pleura likewise became involved, so that empyema was a complicating factor. It is in this type of case that the treatment through the bronchoscope is of special value so that efficient drainage may be maintained before necrosis or fibrosis has time to produce chronic disease.

II. PULMONARY CALCULUS

Illustrative case.—A man, aged forty-eight, came to the clinic April 30, 1925. For six months previous to May, 1923, he had felt tired and ached all over. In May, 1923, it is believed that an abscess of the lung ruptured, since he coughed up a large amount of bloody, purulent material. Following this sudden drainage, cough continued and several hemorrhages occurred, from a mouthful to 250 c.c. in amount. Many small calcified granules were also coughed up. His weight dropped from 196 to 150 pounds. June 20, 1924, in a coughing spell, he brought up a piece of chewed-up toothpick, although there was no history of previous aspiration. Following this, he continued to cough, but very little sputum was produced and there were no pulmonary stones. His condition at the time of examination was fair only. There were occasional periods of fever and he had not been able to work since the onset of his illness.

On examination of the chest, the right lung below the scapula posteriorly and in the right axilla was flat on percussion and showed poor transmission of breath sounds. There were no râles. The leukocytes numbered 18,400. Roentgenologic examination of the chest showed tuberculosis of the right upper lobe with dense consolidation in the right lower lobe which was thought to indicate an abscess. Signs of bronchiectasis were noted in the right middle lobe. The sputum contained no bacilli of tuberculosis.

Bronchoscopic examination showed a marked amount of calcareous material in the posterior division of the bronchus to the right lower lobe. Six or eight large pieces were removed (Fig. 6). The bronchial lumen was markedly obstructed by this deposit and secretion considerably increased after the pulmonary stones were removed.

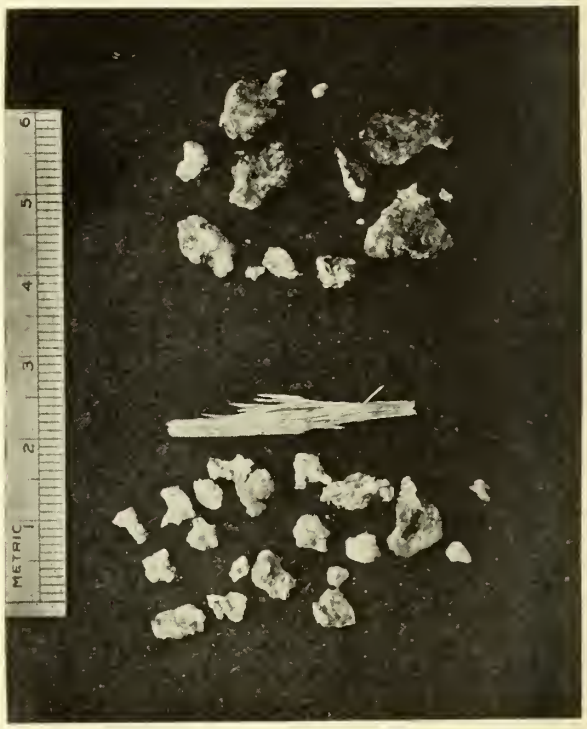

Fig. 6. *a.* Calcified particles coughed out previous to bronchoscopy with duplicate of portion of toothpick. *b.* Pieces of toothpick removed at bronchoscopy.

During the twenty-four hours following removal of the foreign body, the secretions were greatly increased. Ten days later, another bronchoscopic examination was made and there was considerable secretion present, but no more concretions. The patient returned July 15, markedly improved. He had worked hard since his previous admission; his sputum and cough had gradually decreased in amount, and he had gained 10 pounds. Another bronchoscopic examination revealed a considerable amount of purulent secretion from the bronchi on the right side, particularly those of the lower lobe. There was no evidence of stone formation at this examination.

In a letter dated October 19, the patient stated that he had coughed up another stone September 28, 1925. His condition was excellent and he had made a further gain of 13 pounds.

The final diagnosis was pulmonary calculus resulting from aspiration of foreign body. The primary diag-

nosis was chronic pulmonary suppuration of the lower lobe of the right lung.

Comment.—There is only one case representing this division. As noted in the history, the sequence of events was characteristic of an abscess that had ruptured into a bronchus and produced hemorrhage. The calcified granules expectorated and the foreign body were unusual features, the latter particularly, because there was no initial strangulation from which to date the aspiration. Physical examination was characteristic of that usual in cases of bronchiectasis, and there was nothing to suggest the presence of the large amounts of calcareous material that were removed through the bronchoscope. The satisfactory postoperative course is an illustration of the benefit that may be obtained in these obstructive cases, as well as in the acute cases, by withdrawing foreign material through the bronchoscope.

III. CHRONIC INFECTION

1. CHRONIC ULCERATIVE TUBERCULOUS BRONCHITIS

Illustrative case.—A woman, aged forty-six, came to the clinic June 11, 1925. She had never been robust but was in fair health until 1919 when she had a mild attack of influenza and a "nervous breakdown," which necessitated treatment in a hospital for a month. Following this illness she suffered from undue dyspnea on exertion and more or less constant productive cough with inspiratory wheeze and hoarseness of varying severity. In January, 1925, the temperature rose to 101° and she was in bed for three weeks.

Inspiratory stridor and marked diminution of breath sounds over the lower lobe of the left lung were observed when the chest was examined. Roentgenograms showed evidence of tuberculosis of the upper lobes of both lungs. The sputum contained bacilli of tuberculosis.

Bronchoscopic examination showed scarring and distortion of the carina while the left bronchus was involved in an ulcerating, necrotic lesion with thick, white exudate, and the bronchial lumen was reduced at least one-half. These findings warranted a diagnosis of tuberculosis.

Final diagnosis was chronic ulcerative tuberculous bronchitis, with partial stenosis of the bronchus. The primary diagnosis was tuberculosis and obstruction of the bronchus to the left lower lobe.

Comment.—The subdivision including tuberculosis as a causative factor in the production of chronic suppurative disease of the lung is of very great interest from two standpoints: intrinsic damage to the bronchial wall, and the effect of narrowing from extrinsic pressure. In this subdivision, a variety of intra-bronchial pathologic changes has been noted, probably dependent on ulceration, but in various stages of cicatrization. The extrinsic damage seemed to have been produced both by the enlargement of lymph nodes at the hilus and by the inclusion of the bronchus in dense fibrous tissue. In almost all instances, these changes have been present with chronic rather than with acute tuberculosis. It has been our belief, based on clinical observation, that stridor is present only when the lumen of the larger bronchi or trachea is narrowed. It has seemed that the most pronounced stridor is present when the lesion is closest to the larynx. The bronchoscopic examination has served as a very definite means of proving that this clinical observation is correct, because, in every instance in which stridor has been the outstanding symptom, a lesion has been found affecting this particular part of the bronchial tree.

2. STRICTURE ASSOCIATED WITH PULMONARY TUBERCULOSIS

Illustrative case.—A woman, aged nineteen, came to the clinic April 6, 1925. She had been perfectly well until June 1, 1924, when she began to cough and was treated for a "cold" without improvement. In October she began to have fever with increase in cough and expectoration. She was ill for three weeks and the trouble was diagnosed as influenza and bronchopneumonia. After the fever and cough had persisted for two months, a needle was inserted into the left pleural cavity, but no fluid was found. In February, 1925, the temperature was 102.6°; the pulse rate was 140, and dyspnea was present. Since that illness she had had fever in the afternoons; strength was fair but she had lost 10 pounds in weight and had suffered from undue dyspnea on exertion.

At the time of examination in April the patient had chronic productive cough with a considerable amount of sputum, but never more than a teaspoonful at a time. The sputum had no odor and contained no blood save at the time when she was thought to have pneumonia. On examination the mediastinum and heart were displaced to the left. Over the left side of the chest anteriorly resonance was normal and the breath sounds varied from normal to absent and changed simultaneously with an audible and palpable snoring sound or noise that always produced cough. Vocal resonance and vocal fremitus also changed in the same way. The diaphragm was high and almost immobile. The Litten sign was absent. Over the right side of the chest anteriorly, signs of compensatory emphysema alone were present. Over the left side of the chest posteriorly, breath sounds, vocal fremitus and vocal resonance were absent except at the apex. Resonance in this region was normal except at the base, where there was dulness suggestive of elevation of the diaphragm or thickening of the pleura or fluid rising to 2.5 cm. below the angle of the scapula. No shifting of dulness was observed and "coin sound" could not be

elicited. Simultaneously with the gurgling sound and the accompanying cough, breath sounds, fremitus and resonance were intermittently normal or absent. They remained depressed over the dull area, however, at all times. Over the right side of the chest posteriorly, the findings were normal except for emphysema.

A diagnosis of intrinsic bronchial obstruction of ball-valve type was made. The resultant bronchiectasis seemed to explain the presence of the profuse, greenish, purulent sputum and three acute illnesses, on the assumption that the obstruction had been of long duration and of varying degree. Roentgenologic examination of the chest showed old adhesions in the left upper lobe, old pleuritic adhesions at the left base and displacement of the heart to the left. Bronchoscopic examination showed the left main bronchus markedly constricted close to the bifurcation. The aperture was not much larger than a pinhead and permitted but a small percentage of normal ventilation of the left lung. The stricture was dilated to No. 18 French with the evacuation of a considerable amount of thick, tenacious, mucopurulent material. There was a little bleeding. No foreign body was identified and the stricture seemed too high in the bronchus for this to be possible. After dilation, roentgenologic examination of the chest was negative save for a tuberculous lesion in the upper lobe of the left lung that was apparently healed, and the left side of the chest was normal on physical examination.

The final diagnosis was congenital stricture of the left main bronchus. The primary diagnosis was obstruction of the left bronchus, type undetermined.

Comment.—Only one instance of this type of disease has ever been seen by us, and although the lesion could be localized clinically with exactness, yet its nature could not be determined. It was thought that the peculiar signs which have been described were due to a pedunculated tumor moved to and fro by the flow of air during inspiration and expiration and, as a result of movement, producing the peculiar sound immediately succeeded by cough. The cough, we believed, was due to the moving of this body from a tolerant to an intolerant portion of the bronchial wall. On bronchoscopic examination it became clear that this diagnosis was incorrect because, for the first time, we were able to see an obstruction, having the appearance of a perforated diaphragm, almost completely blocking the left main bronchus close to the trachea. The symptoms that had suggested the clinical diagnosis were explained by the simple process of a thick, tenacious mass of mucus passing in and out through the opening in the diaphragm. The former history of this case is interesting from the fact that at one time drainage must have become inadequate and the lung sufficiently unventilated to allow of a diagnosis of pneumonia. In all probability, the cause of these symptoms of consolidation was the retention of secretions in the bronchi distal to the obstruction. With adequate drainage, recovery was prompt. The further history, however, is of special interest. At an ex-

Fig. 7. Appearance of tracheal tumor at the first bronchoscopy.

amination in December, 1925, the patient was found to have not only the lesion on the left side, but also signs in the right lung suggestive of tuberculous involvement. Although the sputum had been repeatedly examined previously, bacilli of tuberculosis were never found. At this examination, however, they were discovered in the sputum. It would appear that the lesion producing the obstruction was, however, not tuberculous, since no evidence of ulceration had ever been seen.

3. GUMMA OF BRONCHUS

Illustrative case.—A woman, aged fifty-one, came to the clinic November 5, 1924. She had been married seven years previously and had never been pregnant. Pus tubes had been removed ten years previously. Two years prior to the examination at the clinic, the patient began having a spasmodic cough with wheezing respirations. No sputum was present. She was not benefited by medicines usually employed in the treatment of asthma. Her malady was progressive, with some expectoration but no blood. The voice had become a little hoarse and undue dyspnea appeared on exertion. There was no seasonal variation of symptoms.

On examination the breathing was of stertorous type and the breath sounds were markedly depressed over the left upper lobe. The left lower lobe was only partially obstructed but the breath sounds were of whistling character. Roentgenologic examination of the chest was negative. The Wassermann reaction was very strongly positive.

Bronchoscopic examination showed a lesion at the bifurcation of the trachea involving the left half of the carina and extending into the left bronchus with the major part of the growth situated anteriorly. A small area of necrosis was observed. A small amount of purulent secretion exuded from the bronchus, which was constricted to one-third of its normal size. The right side was normal. A tentative diagnosis of intrabronchial gumma was made.

The patient was accordingly given antisyphilitic treatment, after two weeks of which the general condition

was much improved and the breath sounds were audible over the left upper lobe; increased aëration was evident in the lower lobe as well. One month later no additional change had occurred. Fourteen months later the patient reported that her cough had almost entirely disappeared and that shortness of breath was noted only on considerable exertion.

The final diagnosis was gumma of the bronchus. The primary diagnosis was obstruction of the left bronchus, type undetermined.

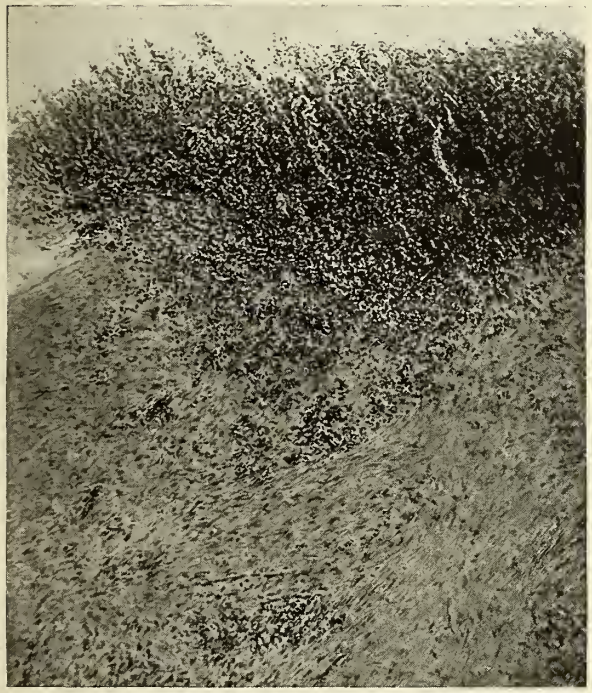

Fig. 8. Microscopic appearance of tissue removed at bronchoscopy.

Comment.—Only one patient representative of this subdivision has been seen throughout the year. Such a lesion, however, should be suspected in every instance in which unusual chronic disease is associated with the positive test for syphilis. The fact that benefit was derived from antisyphilitic treatment confirmed the diagnosis of an intrabronchial gumma suggested by the bronchoscopic appearance of the lesion and the positive Wassermann reaction.

IV. NEOPLASM

1. BENIGN TUMOR

Illustrative case.—A man, aged forty-one, came to the clinic June 23, 1924. He had always been subject to coughs and colds. Three and one-half years previous to examination, he began to spit up blood which seemed to come into his mouth without warning. He would then cough and bring up several ounces of blood. He had had no cough except at these times. Since the onset of his trouble, he had frequently raised blood during the winter but very little in the summer. At the onset there had been fever in the afternoons, cough, malaise and hemorrhages, so that a diagnosis of tuberculosis was made and he was sent to New Mexico for treatment. Two years previous to his admission to the clinic he had had pneumonia and been ill three months. Since then there had been increasing dyspnea with asthmatic attacks, but the patient had improved somewhat in the two months before he came to the clinic.

Bronchoscopic examination had been carried out four years previously as far as the third tracheal ring, but no obstruction had been found. On examination of the chest both sides were equal in size but there was a slightly greater excursion on the left side and much more air entering the left than the right base. There was dulness at the right base with distant breathing and absent fremitus. Considerable stridor was noted. Roentgenograms showed thickened pleura on the left. No bacilli of tuberculosis were found in the sputum.

Bronchoscopic examination revealed a tumor of the trachea arising from the right and posterior wall, just above the bifurcation, and almost filling the trachea (Fig. 7). The tumor was smooth. A small piece of it, removed for microscopic examination, proved to be fibrous inflammatory tissue (Fig. 8). The tumor has gradually been removed by diathermy (Fig. 9), and the patient is apparently well, eighteen months after the first examination.

The final diagnosis was benign tumor of the trachea. The primary diagnosis was obstructive lesion in the lower trachea or upper right bronchus.

Comment.—This is a very small subdivision, and within the year we have had only one example. Clinical localization was possible in this instance and was exact, because the larynx itself was found to be normal on examination, and the presence of stridor indicated a lesion affecting either the trachea or the right main bronchus. The localization on the right side was made pos-

Fig. 9. Appearance of tumor at bronchoscopic examination eighteen months after first treatment.

sible because of the presence of signs indicative of stenosis on that side. The pseudo-asthmatic attacks were also indicative of a lesion affecting the hilus area. From clinical observation for

several years, we have been led to believe that so-called Kopp's asthma is due to the presence of lesions at the hilus. It has been observed most commonly in cases of pressure due to tuberculous lymph nodes or to enlargement from such conditions as metastatic malignant disease, Hodgkin's disease, or lymphosarcoma. This clinical observation has also been verified by the observations made at bronchoscopic examination in a number of cases.

Fig. 10. Microscopic appearance of specimen removed at bronchoscopy.

2. MALIGNANT TUMOR

Illustrative case.—A man, aged twenty-nine, came to the clinic May 7, 1925. A year previously, following exposure, he had felt a pain across the lower part of his chest along both costal margins. It was increased by deep breathing and there was a sensation of a heavy weight on the chest. This sensation disappeared entirely in a week and he was free from trouble for several months, when similar symptoms recurred and he began to be hoarse as well. He had lost 22 pounds.

The left vocal cord was fixed in the cadaveric position. The expansion of the chest was less on the left than on the right side; the breath sounds were diminished over the left side; the Litten sign was absent on the left side and there were sonorous râles throughout both lungs. Roentgenologic examination of the chest was negative.

Bronchoscopic examination showed a bleeding lesion on the mesial wall of the left main bronchus. A specimen removed for microscopic examination proved to be an adenocarcinoma of Grade 4 (Fig. 10). Roentgenologic treatment was given but the patient succumbed in three months.

The final diagnosis was adenocarcinoma of the left bronchus. The primary diagnosis was tumor in the trachea or bronchus.

Comment.—A history of pain, loss of weight, paralysis of the recurrent laryngeal nerve, and bronchial stenosis is characteristic of malignant disease within the trachea or main bronchial trunks. Bronchoscopic examination serves a very useful purpose in cases of this type of disease, as in those of the preceding subdivision, in that it allows visual examination of the growth itself and provides a means by which material may be obtained for pathologic examination, and finally, in that treatment can be locally applied with precision.

SUMMARY

Within the last year, we have been impressed by the improvement in diagnosis and treatment in a large number of cases, particularly of chronic character, because of the coöperation of the staff of bronchoscopists and surgeons. The examination with the bronchoscope has not only helped in the precision of diagnosis, but has clarified clinical opinions as to the cause of localizing signs and symptoms. It has been the means by which certain unusual lesions have been demonstrated and it has provided a method by which materials may be obtained for pathologic examination. The function of the instrument is not alone, however, confined to diagnostic procedures; it has been of great service in the treatment of certain groups heretofore managed only with considerable difficulty, and frequently unsuccessfully.

HOYT'S PROTEIN CEREAL OMITTED FROM N. N. R.

Hoyt's Protein Cereal is a preparation of gluten in the form of flakes containing protein, 78 per cent; fat, 1 per cent, and starch, 4 per cent, which is manufactured by the Pure Gluten Food Co. (New and Nonofficial Remedies, 1926). The Council on Pharmacy and Chemistry reports that objection was made to the claims made for this product in 1925. In June, 1926, the Council received a circular containing misleading and unwarranted claims essentially similar to those to which objection had been made previously; therefore, the Council rescinded its acceptance of Hoyt's Protein Cereal and directed its omission from New and Nonofficial Remedies. (Jour. A. M. A., Nov. 20, 1926, p. 1760.)

HODGKIN'S DISEASE AND ITS FUTURE*

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Saint Paul

In 1832, Thomas Hodgkin[1] published a paper in the Transactions of Royal Medicine and Surgery under the title: "On some morbid appearances of the Absorbent Glands and Spleen." He reported seven cases in some detail. This paper truly marks the appearance on the horizon of medicine of an heterogenous group of lymphatic or lymphoid diseases. Bennett[2] and Virchow[3] in 1845, working independently, separated from the group of lymphadenopathies a disease with characteristic blood changes known as lymphatic leukemia. Wilkes[4] in 1856 going over the material that Hodgkin had studied, now with better knowledge and improved methods and instruments, pointed out possibly four, certainly two, of the cases as constituting a definite type of disease. To honor his distinguished predecessor as teacher of Pathology at Guy's Hospital he named it Hodgkin's Disease. A few years later Cohnheim[5] described a condition simulating leukemia without an increase in the circulating leukocytes and called it pseudo-leukemia. In 1899 Sternberg's[6] work appeared on the etiology of Hodgkin's disease. Briefly, the pathology of Hodgkin's disease was developed during the period of 1832 to 1899. During this period much confusion occurred in medical literature as to the proper terminology. The older names now have been relinquished. In Germany the disease is generally known as lymphogranulomatosis, and in England as lymphadenoma. From the year 1899 to the present time a large amount of work principally on the etiology of the condition has been done.

ETIOLOGY

Young adult life and trauma are usually considered predisposing factors. The exciting cause is unknown. The principal theories advanced to explain the possible exciting agent are the parasitic, neoplasmic and infectious. The presence of eosinophiles in the glands and sometimes also in the circulating blood at times to a marked degree suggests a parasitic agent. George L. Lambright[7] reports a case of Hodgkins disease with recovery of parasites from the stools and improvement with anti-parasitic treatment. The theory to-day has practically no adherents. According to Symmers,[8] Hodgkin's disease is not neoplasmic in origin because "it maintains its histological individuality throughout all changes of environment. In other words, the lymph nodes and other lymphoid tissue in the fully developed Hodgkin's disease show a composite of cells, each member of which finds its prototype in the normal bone marrow." Others contend that when Hodgkin's disease invades and destroys bones, muscles and other organs not containing lymphoid tissue it resembles a malignant tumor. However, the weight of opinion to-day seems to favor an infectious agent. Since the administration of arsenical preparations sometimes greatly improves Hodgkin's disease it has been frequently mentioned that a spirillium may be the exciting cause. Sternberg[9] in 1899 very forcibly began advocating a peculiar type of tubercle bacillus as an etiological agent. A gram positive bacillus has been found by Fraenkel,[10] Munch,[10] Kusunoki[11] and Hirschfeld.[12] A gram positive diphtheroid bacillus has been isolated by Bunting,[13] Yates,[13] de Negri[14] and Mieremit.[14] Sternberg admits that the staining qualities of his bacillus are uncertain and that it varies in size and at times might be segmented when stained. Since the glands are filters to the parts they drain, it is possible that they always harbor some type of infection. It is equally true that the infection may vary in type depending on the infected part under drainage. So it must be most difficult to be certain about any one bacterium found in the lymph nodes as to its infectuous or non-infectious character. One may hold either the parasitic, neoplasmic or infectious theory. By no one has Hodgkin's disease been reproduced in man or animal. As the Pathology of Hodgkin's disease is more carefully studied and compared with the infectious granulomata of tuberculosis and syphilis the infectious theory is gaining ground. Symmers thinks that for the present Hodgkin's disease should be placed in a group neither neoplasmic nor infectious, but given a place like leuko-sarcoma or Cohnheim's pseudo-leukemia.

PATHOLOGY

The lymph nodes are grossly enlarged, usually one or several groups being involved. The glands are quite hard and discrete. If matting or adherence to the skin is present a secondary infection has caused it. In young individuals the glands may be soft early, but hard and fibrous

*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, August 9 and 10, 1926.

late in the disease. With Symmers' description one may say that Hodgkin's disease is an infection of the hemolytopoietic apparatus. Its histogenesis is determined: (1) by preliminary hyperplasia of lymphoid cells in various parts of the body; and (2) by the discharge of mononuclear and multinuclear giant cells from the bone marrow, with or without eosinophiles and eosinophilic myelocytes, and their arrest by the hyperplastic lymphoid depots in pursuit of their function as filters, the fibroblastic reaction in the recipient tissues representing a mechanical process designed to support the excess cells by which they are burdened.

SYMPTOMATOLOGY

The symptoms vary a great deal depending upon the location and size of the glands, single group involvement or general distribution; also, whether or not the disease is limited to the lymph nodes, lymphoid submucous tissues or auxiliary lymphoid tissue, and finally, whether it invades and destroys tissues containing no lymphoid tissue, *e.g.*, muscles, bone, mucous membrane and skin. Early there are no subjective symptoms. The objective signs embrace the enlarged glands, the pressure phenomena from this enlargement and finally the destruction of other tissues either by migration or extension of the disease. The cervical glands may be enlarged in from 7 to 70 per cent of the cases, depending entirely on the observation and experience of a certain writer. Besides the enlarged glands neuritic pressure pain and swelling of the neck and face may frequently be present. With abnormal enlargement of the axillary glands, edema, swelling and pain in the upper extremity may be encountered. Cough, cyanosis, orthopnea, drooling of the saliva, dyspnea, and sometimes also exophthalmos, edema of the face, swelling of the tongue, paralysis of the vocal chords and pleural fluid indicate marked mediastinal involvement. On percussion the sternal dullness is much broader. Whitaker[15] says that "Hodgkin's disease is indicated when the radiograph shows homogeneous, roughly lobulated shadows in the mediastinal or hilus regions, which shrink rapidly under roentgen-ray treatment." With retroperitoneal glandular involvement one may meet pain simulating an acute appendix, jaundice, mild symptoms of pyloric obstruction, edema of the lower extremities and sometimes symptoms and signs of inferior vena cava obstruction with excruciating pain. The spleen is enlarged very frequently. Liver enlargement is rare. Pruritis of the skin is common and herpes, urticaria, pigmentation and dermatitis not infrequent. Weber[16] reported a case showing recurrent purpura and hemorrhagic symptoms. Bones are frequently involved. Paraplegia and cauda equina symptoms have also been reported by Weber[16] in Hodgkin's disease. The blood examination shows usually a leucocyte count of 10,000 to 20,000 with a secondary anemia. Leucocyte counts, however, as low as 3,000 have been recorded. Bunting[17] observed a case for two years with a leucocyte count of 100,000. According to Bunting[17] both a relative or absolute increase in transitional cells and platelets is characteristic of Hodgkin's disease. His views, however, are not universally accepted. Constitutional symptoms of fever, lassitude, weakness and loss of weight vary widely in the various cases. Fever may be slight, irregular and persistent for months, or again irregular, high and intermittent associated with chilly sensations, sweats and pains. Sometimes it is relapsing in character, running a course of several months with a relapse of from ten to thirty-five days. This is sometimes spoken of as the Pel[18]-Ebstein,[19] larval or typhoid form of Hodgkin's disease.

DIFFERENTIAL DIAGNOSIS

1. Local or general infectious adenopathy is due to a focal infection like a tonsillitis, sinusitis, an abscessed tooth, or a general infection like scarlet fever, diphtheria or measles. In the presence of a general or focal infection glandular enlargement is readily explainable.

2. Tuberculous adenitis. The history, fever, loss of weight, tuberculin tests, occasional soft character of the glands, matting of the glands, coalescence, adhesion to skin, suppuration, evidences of tuberculosis elsewhere in the body will usually suffice to make a positive diagnosis of a tuberculous adenitis.

3. Leukemia. A careful examination of the blood for immature forms of the white cells is more important than an actual leucocyte count although the count most frequently is very much increased.

4. Syphilis. The presence of a chancre or other venereal disease in the history, a positive Wassermann, Argyll-Robertson pupil, and similar suggestive or positive findings of lues will usually aid in making a correct diagnosis.

5. Still's disease, which is characterized by general glandular adenopathy, pain, spasticity, enlarged spleen, contractures, arthritic involvement and frequently mental impairment, will cause little difficulty or confusion in the differential diagnosis.

6. Splenomegaly. Here one must carefully rule out acute and chronic enlargement of the spleen. Typhoid, malaria or any other acute infection may produce some splenic enlargement. Other chronic or rare conditions like cirrhosis of the liver, pernicious anemia, myelogenous leukemia, Banti's disease, congenital or acquired syphilis, polycythemia, familial hemolytic jaundice, malignant neoplasm, abscess, amyloid disease and pseudo-leukemia, must be properly eliminated from the subjective complaints, objective signs and laboratory tests.

7. Carcinoma. After examining the patient one can usually find either a local or a general carcinosis to account for the enlarged glands.

8. Finally, lymphosarcoma and aleukemic leukemia may be the most difficult to differentiate from Hodgkin's disease.

So in concluding the short survey of the differential diagnosis it is necessary to state that a positive diagnosis of Hodgkin's disease is made in conjunction with a biopsy only.

PROGNOSIS

The prognosis is hopeless. It has been customary to give the duration of the disease as two to three years; yet death can occur in two months. Cunningham[20] has reported a case with a duration of twenty-five years.

TREATMENT

Removal of infectious foci, operation, arsenic, *x*-ray, radium and vaccines may be tried early in the disease. Later, palliative and symptomatic treatment is indicated. After the administration of Fowler's solution or neosalvarsan a regress in glandular enlargement has been observed. Yates[21] and Bunting[21] are quite sure that early removal of the involved group of glands will give a cure in at least 20 per cent of the cases. *X*-ray and radium ought to be given by some one well skilled in their action and method of administration. It is claimed that the vessels are occluded by this method and the tissue suffering from a lack of nutrition slowly becomes necrotic. Vaccine preparations are of questionable value. It seems, however, at the present time that no known method of treatment is without great shortcomings. And it is logical to assume that a rational method of treatment can be worked out only when the etiological factor is definitely established.

COMMENT

The nature of Hodgkin's disease is as clear or obscure as the differentiation between an inflammatory process and a neoplasmic growth. Briefly, certain definite tissue reactions have been accepted as characteristic of each condition. Hyperplasia of adult or specialized tissue usually means inflammation, while neoplasms are characterized by active proliferation, infiltration and a reversion to the embryonic type of cell. The cause of neoplasms is unknown. One can say that localized Hodgkin's disease resembles more an infectious process while the proliferative and infiltrative is more characteristic of a neoplasm. It is interesting to note that Hodgkin's disease has been observed to transform into certain conditions that we are inclined at the present time to accept as neoplasms. Yates and Bunting[22] record a case in which the blood picture in a typical case of Hodgkin's disease suddenly changed into the blood picture of chronic lymphatic leukemia. Levin[23] has placed on record a case of Hodgkin's granuloma of the right side of the neck in which an extensive lymphosarcoma of the naso-pharynx developed. Under radium treatment the Hodgkin's granuloma of the neck and naso-pharynx disappeared, while the gastro-intestinal condition continued progressively. He also reports two other cases which had lymphosarcoma of the inguinal and axillary regions which later developed in another region into typical Hodgkin's disease. A fourth case of a Hodgkin's disease of the neck, the same observer reports, was successfully treated by radium. The disease recurred later, however, as a typical mediastinal lymphosarcoma. Mueller[24] reported two cases of Hodgkin's disease which showed a change in the histological structure from typical lymphogranuloma to round cell sarcoma or vice versa. Senator[25] and Westphal[26] describe the transformation of pseudo-leukemia into chronic lymphatic leukemia. Sadler[27] observed the change of a lymphosarcoma to a chronic lymphatic leukemia. Ellermann[28,29,30] succeeded in transmitting leukemia from generation to generation experimentally in fowls by inoculating a cell-free filtrate. He also successfully transformed leukemia into neoplasmic growths, such as lymphoma

and myeloid tumors. Young,[31,32] by injecting micro-organisms isolated from an epithelial tumor in white mice, produced lymphatic leukemia. He found, when the animals died early, typical lymphatic leukemia; and, in cases where more time was allowed for the development of an advanced process, the changes were characteristic of a sarcoma. He concluded that the virus produces a malignant proliferation of the cells of mesodermic origin, but if a local infection of susceptible epithelial cells took place it would develop in carcinoma. Gye[33] succeeded in cultivating and Barnard[34] in demonstrating microscopically a virus capable of transmitting chicken sarcoma. Gye also produced chicken sarcoma with the virus from a human cancer. He argues that the tumors have a virus, non-specific in character, as their extrinsic cause, but in addition to that they have a specific factor responsible for the specific changes in the cells themselves to insure progressiveness of the process. This is a point which distinguishes neoplasms from inflammations. Recently Evans[35] and Leucutia[35] described three cases of lympho-sarcoma which, in their terminal stages, changed into lymphatic leukemia. This happened as soon as the bone marrow became involved.

Clinical observations of Hodgkin's granuloma transforming into a chronic lymphatic leukemia and into a lymphosarcoma would lead one to believe that these conditions are at least somewhat related. Experimental evidence on the lower animals in reproducing chronic lymphatic leukemia, myeloid leukemia, sarcoma, and lympho-sarcoma and the transformation of one into the other and vice versa both by a filterable virus and by an organism demonstrated microscopically, would suggest strongly the relation directly or indirectly of infection in the production of neoplasms. When time demonstrates what rôle infection plays in the production of neoplasms, Hodgkin's disease will receive its definite classification.

CONCLUSIONS

1. Hodgkin's disease has been observed;
   (*a*) to transform into chronic lymphatic leukemia and lympho-sarcoma.
   (*b*) to recur as lympho-sarcoma.
   (*c*) to exist simultaneously with lympho-sarcoma.
2. Experimentally on lower animals chronic lymphatic leukemia and lympho-sarcoma have been reproduced by a filtrable virus and transformed from one into the other.
3. Hodgkin's disease seems closely related to chronic lymphatic leukemia and lympho-sarcoma.

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THE SUGGESTED USE OF THYROID EXTRACT TO REDUCE THE INCIDENCE OF POSTOPERATIVE EMBOLISM*

Preliminary Report

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While it is probably true that not one factor, but many, are responsible for fatal pulmonary embolism, among the most significant is the slowing of the rate of blood flow, noted by Virchow in 1846.

Evidence of the tendency toward thrombus formation in cardiovascular disease which produces slowing of the rate of circulation, has been observed uniformly at necropsy in many cases. Welch, who has dealt fully with the subject of thrombosis in cardiovascular disease, points out that thrombosis is common in the veins of the neck, arm, and chest on the left side in advanced cases when dyspnea, dropsy, and cyanosis, conditions favoring slowing of the rate of circulation, are usually present. Robertson finds that the auricular appendages, auricles and apex of the left ventricle contain thrombi in cases of cardiovascular disease, and he has not infrequently found thrombosis of the vaginal and prostatic plexuses when patients died from other causes.

The circulation of the blood after surgical operations is subject to several influences, all possibly tending to diminish its rate of flow. There is a progressive lowering of blood pressure due to the recumbent position in bed. In a series of studies by Walters, Hendricks and Greene on blood pressure and chemical changes in the blood of twenty-five patients who had been operated on, it was shown that while the patient was resting in bed following operation there was an average daily drop in systolic and diastolic blood pressure of 4 mm. of mercury, with an average total drop of 30 mm. Also, during this time the leukocytes, platelets, serum fibrin, plasma fibrin and calcium, and the hematocrit readings were studied. In general, a noticeable increase in the fibrin of the blood, and in most instances an increase in leukocytes, were the outstanding blood changes. Such an increase in the fibrin might predispose to the formation of clots in abnormally stagnated blood. Another important factor, to which I have found no previous reference, is the possibility that retardation of blood flow in the vessels of the abdominal cavity may result from the diminution in intestinal peristalsis which occurs subsequent to operation.

During the forty-eight-hour period of intestinal quiet which follows abdominal operations the flow of blood in the branches of the mesenteric arteries and veins may be diminished because of loss of peristalsis. Such a slowing of the rate of flow in the tributaries of the larger vessels in the abdominal cavity may be of considerable significance in producing stagnation in the portal tree with a corresponding effect on vascular flow in general.

During the first four days following operation the abdominal wound is extremely painful, and increase in intra-abdominal pressure, such as that caused by sneezing or coughing, aggravates the pain. The patient, although he may not be aware of it, accordingly restricts the depth of his breathing so that it is thoracic in type. Diaphragmatic excursion is thereby diminished and the to-and-fro effect of movements is decreased to the viscera and their blood vessels, again possibly tending to retard abdominal and visceral circulation. Also the fact that a period of rest in bed tends to lower the rate of metabolism must be remembered.

Attempts have been made to prevent the decrease in the rate of blood flow following operation by early movement of the patient in bed from side to side, as advocated by Coffey, or by exercises, as suggested by Wilson and Poole. Unfortunately, neither suggestion has been acted on sufficiently to determine the effect. Lockhart-Mummery, in a symposium on pulmonary embolism, stated that, in his opinion, most of the fatal pulmonary emboli had their beginning as thrombi in veins which were tributaries to the inferior vena cava. Both active and passive movements of the extremities should tend to increase the rate of blood flow in the largest branches of the inferior vena cava, namely the femoral veins.

Two years ago, after a consideration of the effect of these procedures in increasing the rate of blood flow, it seemed to me that not only might the rate of circulation be increased in this manner but that the metabolism of the body might be increased by thyroid extract with resulting increase in peristalsis, increasing depth of respiration, acceleration of blood flow, and, indeed, speeding up of all the functions of the body. Thyroid extract was given by mouth in

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THYROID EXTRACT AND MOVEMENT OF EXTREMITIES EMPLOYED TO REDUCE INCIDENCE OF PULMONARY EMBOLISM IN CASES IN WHICH OPERATION WAS PERFORMED FROM OCTOBER, 1924, TO OCTOBER, 1926

Operation		Totals
For carcinoma of the stomach		26
Partial gastrectomy	14	
Gastro-enterostomy	3	
Exploration	9	
For peptic ulcer		179
Gastro-enterostomy for duodenal ulcer	71	
Gastro-enterostomy for gastric ulcer	3	
Gastro-enterostomy for duodenal ulcer (with appendectomy)	57	
Gastro-enterostomy for duodenal ulcer (with cholecystectomy)	4	
Gastro-enterostomy for duodenal ulcer (with herniotomy)	2	
Gastro-enterostomy for duodenal ulcer (with excision of gastric ulcer)	1	
Excision of gastric ulcer and gastro-enterostomy	2	
Excision of duodenal ulcer, pyloroplasty and appendectomy	3	
Excision of duodenal ulcer, and gastro-enterostomy	5	
Excision of duodenal ulcer, gastro-enterostomy and appendectomy	2	
Excision of duodenal ulcer and gastroduodenostomy	1	
Gastroduodenostomy	1	
Gastroduodenostomy and appendectomy	1	
Closure of perforation and gastro-enterostomy	1	
Partial exclusion of stomach (Devine operation for bleeding duodenal ulcer)	1	
Partial gastrectomy for gastric ulcer	15	
Excision of gastric ulcer	1	
Excision of gastric ulcer, gastro-enterostomy and appendectomy	2	
Excision of gastric ulcer, gastro-enterostomy and cholecystectomy	1	
Excision of gastrojejunal ulcer, disconnection of anastomosis and partial gastrectomy	1	
Partial pylorectomy	1	
Jejunostomy for gastric ulcer	1	
Resection of pylorus	1	
Disconnection of gastro-enteric anastomosis, excision of gastrojejunal ulcer, gastroduodenostomy and enterostomy	1	
Rammstedt for congenital pyloric stenosis		2
On gallblabber and common duct		204
Gallbladder (cholecystectomy 55, and cholecystostomy 6)	161	
Gallbladder and common duct	5	
Gallbladder and stricture of common duct	1	
Gallbladder and stone in common duct	17	
Common duct (fistulas)	2	
Stricture of common duct	11	
Stone in common duct	7	
On appendix		235
Appendectomy	227	
Drainage	8	

two-grain doses three times a day for seven days, beginning on the third or fourth day after operation and continuing until the patient was out of bed. No deleterious effect was noted. The patients were urged to move themselves about in bed, especially to turn from side to side. In the period between October, 1924, and October, 1926, these movements and thyroid extract were employed in 1,745 cases in which I performed major operations (Tabulation). No patient less than seventy years of age died from pulmonary embolism. Further clinical support to the value of increased metabolism in the prevention of thrombosis and embolism is lent by Plummer's observation that in cases of severe cardiac decompensation coincident to hyperfunctioning thyroids thrombosis or embolism rarely, if ever, occurs. Experimental evidence in support of the hypothesis is seen in the recent work of Shionoya and Rowntree with the use of the extracorporeal vascular loop. In studying the circulation in rabbits they noted that thrombosis in the loop occurred in from four to ten minutes. When 1 mg. of thyroxin was administered daily for three days to each rabbit, thrombosis in the loop did not occur for from twenty-five to thirty minutes; the change was sustained for three days.

It seems to me that in elderly patients with cardiovascular disease thrombosis and embolism may occur as a terminal event, similar to bronchopneumonia. In the series of 1,745 cases there were two patients, both more than seventy years of age, who died from other causes, in whom unexpected and coincidental pulmonary embolism was found at necropsy. Both showed clinical evidence of marked cardiovascular disease, which was found at necropsy. In one of these cases suprapubic cystostomy had been performed because of hematuria resulting from prostatic hy-

THYROID EXTRACT AND MOVEMENT OF EXTREMITIES EMPLOYED TO REDUCE INCIDENCE OF PULMONARY EMBOLISM IN CASES IN WHICH OPERATION WAS PERFORMED FROM OCTOBER, 1924, TO OCTOBER, 1926—Continued

Operation		Totals
On colon		10
On small intestine		24
On rectosigmoid and sigmoid (colostomy and resection for carcinoma)		33
On rectum		38
For hernia		189
Inguinal	135	
Umbilical and inguinal	1	
Male genital and inguinal	10	
Femoral and inguinal	2	
Umbilical	15	
Ventral	16	
Ventral and inguinal	3	
Femoral	7	
For goiter		114
On neck (excision submaxillary, submental glands, block dissection, and so forth)		46
On spleen (splenectomy)		3
On breast		82
Radical amputation	37	
Other operations	55	
On tubes and ovaries		19
Plastic on the vagina		86
On uterus		51
Hysterectomy	24	
Myomectomy	4	
Vaginal hysterectomy (Mayo operation for prolapse)	13	
Other operations	10	
For benign hypertrophy of prostate		183
Suprapubic prostatectomy	89	
Cystostomy	81	
Perineal prostatectomy	10	
Other operations	3	
On male genital organs		36
On bladder		28
On ureter		11
On urethra		12
On kidney		79
Nephrectomy	51	
Pelviolithotomy	18	
Other operations	10	
For varicose veins of the leg		17
Miscellaneous		38
Total operations		1,745

pertrophy. Bleeding continued, necessitating two transfusions. Renal function was considerably reduced. In spite of hot packs and drastic catharsis, the blood urea remained approximately at 90 mg., and uremia was imminent. In the other case, empyema of the gallbladder, cholecystostomy had been performed. Subsequently the wound became infected and gaped, and partial eventration occurred, necessitating secondary closure of the wound. Pneumonia ensued and at necropsy pulmonary embolism was a coincidental finding. These two cases, in my opinion, are examples of a small group of cases of pulmonary embolism occurring as a terminal event in elderly patients. It seems improbable that in those two cases embolism might have been prevented. In elderly patients, diseases of the heart and blood vessels are permanent and cannot be compensated. The method described for increasing the circulation by increasing the metabolism of the body seems to have its greatest field of application in cases in which there is no gross cardiovascular disease, and in which fatal pulmonary embolism is such a catastrophe.

Undoubtedly there are factors other than a lowering of blood pressure, a lowering of the rate of metabolism, and a possible slowing of the circulation that are responsible for the formation of thrombi and emboli, or the incidence of postoperative embolism would be much higher. Whether infection, as may be inferred from Rosenow's isolation of streptococci from emboli at necropsy, or changes in blood fibrin, or unknown changes in the blood or tissue fluids, are influential factors in causing blood thrombi or emboli, is as yet undecided. However, lowering of blood pressure, slowing of the rate of metabolism and possibly slowing of the circulation as a result of prolonged rest in bed with great diminution of peristalsis and the restricted ex-

cursion of the diaphragm following operation may play an important part in either the predisposition to, or the causation of, postoperative thrombosis and embolism. By means of thyroid extract which increases metabolism we hope to attack the problem successfully. It is too early to determine whether the hypothesis is correct. Experimental studies are now under way and we hope to present them in the near future.

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WHAT PRICE SMALLPOX!

This is the title of a news letter released by the Conference of State and Provincial Health Authorities. It was written by Dr. Charles V. Chapin, president of the American Public Health Association and for many years superintendent of health of Providence, R. I.

During 1925, according to Dr. Chapin, there were nearly 40,000 cases of smallpox in the United States; more than in any other country for which statistics are available, with the possible exception of Mexico. Even Soviet Russia, with a larger population, had only half as many cases and "this state of things is no chance event of the year. For fifteen years and longer we have had more smallpox than any country in Western Europe, indeed generally more than the whole of Western Europe." Dr. Chapin urges the public not to be fooled by the mildness of the cases which have appeared during recent years, pointing out that a very virulent type of smallpox broke out in Detroit a few years ago and that it is this type that is liable to be imported from Mexico or other countries at any time. In this and a second release entitled "Good Citizenship Will Wipe Out Smallpox" he stresses the fact that vaccination is the only means of preventing the disease.—*Health News*, N. Y., Nov. 29, 1926.

THE DIAGNOSIS AND TREATMENT OF ANAL FISTULA*

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Fistulas of the anus originate in crypts that have become infected as a result of stretching and trauma by the passage of large formed stools, the tearing of a papilla at its upper border, or abrasion of the mucous membrane produced by a hard particle. The resulting hyperemia and edema close the opening of the crypt and the infectious process burrows in various directions. Some tracts pass between the external and internal muscles, although almost as often they may burrow either through the fibers of the external muscle or over. After it has passed the muscle boundary, it usually forms an abscess and ultimately ruptures externally. Occasionally the abscess may pass up along the rectal wall and rupture through into the rectum. When it ruptures externally it forms a complete external fistula; when it ruptures through the rectal wall, a complete internal fistula results. Usually with the latter there is also an external opening. The so-called blind fistula is formed by the rupture of the abscess through the anal crypt whence the infection originated; this is more properly called an anal sinus. The prevalent belief that these fistulas begin as abscesses is incorrect.

A so-called incomplete external fistula may exist only when the examiner is unable to find the internal opening, which may have healed when the abscess ruptured externally or was lanced. The relief from pressure by the rupture of the abscess sometimes permits the internal opening to heal. Healing of the abscess prevents the escape of discharges externally, thereby causing the internal opening to remain patent. These so-called incomplete external fistulas were primarily complete fistulas and this is a significant factor in the consideration of their cure.

Most of the crypt infections are non-specific and the organisms are of the usual pus-forming group which inhabit the fecal content. Tuberculosis is rarely the exciting cause and I doubt if there is such a thing as a primary tuberculous fistula, although, of course, it may be possible for the bacillus of tuberculosis to infect an anal crypt

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in the same manner that it attacks almost any anatomic structure.

The preparation for operation is that usually adopted in all forms of rectal surgery. Sacral anesthesia is preferred. The bowels should not move for three days after the operation. It is not necessary to "confine" the bowels with opium. Most patients can control their movement for three days on a liquid and soft diet. When the stool habit is reëtablished the rectum should be irrigated thoroughly with hot water after each movement and clean dressings applied.

The treatment of anal fistula is surgical and the success depends on the question of locating the internal opening. It is not always possible to find this opening before operation. Methylene blue injected into the external sinus may appear on gauze inserted through the anus, but failure of the color to stain the gauze seldom means that there is no connection with the bowel. It can more often be interpreted as an indication that the anal sphincters are contracting and closing off the inner end of the sinus. Probing previous to operation is not successful unless the tract runs directly to the anus. Usually external sinuses anterior to a line drawn between the ischial tuberosities are connected with an internal opening in an anterior anal crypt by a fistulous tract which leads in a straight line to the anus. Sinuses posterior to this line usually curve around and enter an anal crypt in the median line of the anus posteriorly. The silver wire probe, therefore, is useful in the former, but in the latter, due to angulations, it cannot follow unless the tract is incised as it is probed. I find it unnecessary to use methylene blue, bismuch paste or any of the other substances usually injected preoperatively to aid in following the tracts. It is just as easy to follow the ramifications by the characteristic appearance of the diseased tissue, and then the operative field is not stained and obscured when the tract is opened as it is when methylene blue is used.

Two methods of approaching the fistula are possible and it will be found that one method will be useful in certain cases and the other method in others. In the more generally accepted method the external sinus is opened and the tracts followed from that point. I usually begin at the internal opening if possible. It is important to note that in this manner a false internal opening is not likely to be made. Making an internal opening when none is found, as is advised and practiced by some, is not followed with good results.

Since the anal crypt is the source of the infection causing the abscess which goes on to rupture and persists as a discharging fistula, we should expect to find the internal opening in the crypt. Often an inspection through an anoscope will reveal a definitely ulcerated sinus or a sinus discharging pus. At other times only a granular projection can be seen behind the dentate margin, Again, there may be a large ulcerated pocket. In general it may be said that the larger the internal opening the more frequently will the external opening heal. In still other instances, there is no visible opening, ulcer, pocket or granular teat. All crypts appear normal. This is the discouraging group and the usual report is: "No internal opening found." However, if we recall that it is possible for the internal opening to heal periodically just as the one externally does, we shall profit by a more careful inspection and probing of the crypts. Often I have found a scar there and after opening it with a knife point, inserted a soft silver wire probe and noted its immediate appearance through the tract into the wound where I had opened the sinuses externally.

Internal openings are rarely seen above both muscles. I have seen them only in rare cases in which the abscess involved the rectal wall and ruptured through (and even then the original internal opening was in the anus) and when the probe pierced normal tissue instead of following a diseased tract.

After locating the internal opening, the tracts are opened throughout. The anal sphincter (external) is cut through at right angles to the muscle fibers at a point over the diseased crypt. Deep tracts are excised and all margins cut away to prevent healing on the surface previous to deeper union. The fistulous tunnels are converted into ditches. The wound is packed with iodoform gauze and dressed daily. The postoperative care is just as important as the operation; the wound should be carefully treated to produce satisfactory healing. Swabbing with medicated solutions such as mercurochrome, dichloramin-T and so forth, trimming granulations, and preventing healing of superficial areas previous to those deeper in the tissues, will often determine the success of the operation.

Occasionally it is possible to excise the tract completely and close the wound by suture. If the condition of the tract is chronic, if there is

fibrosis and no branching and it leads directly from the internal to the external opening, primary union may sometimes be procured by this procedure. If it fails, the wound sloughs open and can be packed and treated like the others. In about 20 per cent of these cases the results are satisfactory, and this justifies the procedure.

13 REASONS FOR REGISTERING BIRTHS

There is hardly a relation of life, social, legal, or economic, in which the evidence furnished by an accurate registration of births may not prove to be of the greatest value, not only to the individual, but also to the public at large. It is not only an act of civilization to register birth certificates, but good business, for they are frequently used in many practical ways:

(1) As evidence to prove the age and legitimacy of heirs;

(2) As proof of age to determine the validity of a contract entered into by an alleged minor;

(3) As evidence to establish age and proof of citizenship and descent in order to vote;

(4) As evidence to establish the right of admission to the professions and to many public offices;

(5) As evidence of legal age to marry;

(6) As evidence to prove the claims of widows and orphans under the Widows and Orphans Pension Law;

(7) As evidence to determine the liability of parents for the debts of a minor;

(8) As evidence in the administration of estates, the settlement of insurance and pensions;

(9) As evidence to prove the irresponsibility of children under 12 years of age for crime and misdemeanor, and various other matters in the criminal code;

(10) As evidence in the enforcement of laws relating to education and to child labor;

(11) As evidence to determine the relations of guardians and wards;

(12) As proof of citizenship in order to obtain a passport;

(13) As evidence in the claim for exemption from or the right to jury and militia service.

MINNESOTA INFANT MORTALITY RATE AMONG LOWEST IN UNITED STATES

Minnesota had one of the lowest death rates among infants in the country for 1925, Grace Abbott, chief of the children's bureau at Washington, recently announced in her annual report. The infant mortality for the United States during the year was 72 to 1,000 births. In Minnesota, Washington, Oregon, Iowa and Nebraska, the rates were 60 or below.

DIAGNOSIS OF PARANASAL SINUS DISEASE*

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The diagnosis of suppuration and more especially inflammation of the nasal accessory sinuses may at times be exceptionally difficult, requiring repeated examinations.

Vander Hoeve of Holland has remarked that the rhinologist cannot say with absolute certainty that a person has no sinus affection. Many cases are overlooked by a too hasty examination. A careful analysis of the patient's symptoms is always important. In acute cases pain is a very common symptom, while in the chronic cases it is surprisingly conspicuous by its absence. Frontal headache may be caused by an involvement of any of the sinuses, more particularly the frontal and antrum. Pain in and around the eyes is suggestive of ethmoidal infection.

The first step in our examination should be anterior and posterior rhinoscopy. Observe carefully the general appearance of the interior of the nose; the condition of the nasal mucous membrane; the presence of predisposing factors; the presence of polyps; the condition of the lateral nasal wall; the presence of discharge, its character, location and amount. With proper illumination this forms the sheet anchor of diagnosis in a study of disease of the posterior group of sinuses, *i.e.*, the posterior ethmoids and sphenoid. Observe the condition of the epithelium and membrane of the olfactory fissure, the character of its vascularity, smoothness and secretion. Observe the posterior tips of the middle turbinates. The nose should then be shrunk with a weak adrenalin and cocaine spray and anterior and posterior rhinoscopy repeated.

Increased hyperemia or hypersecretion on one side is often associated with sinusitis on that side. Suction should be used and frequently secretion or pus will be seen that was not observed before. The accessory sinuses may be divided into two series: (1) those emptying into the middle meatus—the frontal sinuses, the antra, and the anterior and middle ethmoidal cells; (2) those emptying into the olfactory fissure—the posterior ethmoidal and the sphenoidal cells. Having established the existence of purulent sinus disease,

*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, August, 1926.

the first important question is: Does the pus come from the first or second series, or both? If the pus comes from under the middle turbinate or flows back under the structure, we are dealing with an affection of one or more of the first series of sinuses, namely, the frontal, the anterior and middle ethmoidal cells or the antra. The antrum is most frequently affected of all the sinuses, and can immediatedy be diagnosed by irrigation, either through the natural opening or preferably by puncture through the nasal wall beneath the inferior turbinate. Having obtained pus by irrigation the question then arises whether we are dealing with a frank disease of the antrum or is it acting as a reservoir? If the pus does not reappear in the middle meatus within a half hour we may feel sure that we are dealing with an isolated disease of the antrum.

On the contrary, should the pus reappear in the middle meatus within fifteen or twenty minutes we may rest assured that its source was not in the antrum, because the antrum could not refill in such a short time. Where is the discharge coming from? It must come from the ethmoidal cells or the frontal. By this time we are aware that we are dealing with a combined empyema. At this point of the examination we may submit our patient to transillumination and *x*-ray, but it should not replace further scientific investigation along lines which are necessary to arrive at an accurate diagnosis. An effort should be made to probe and wash the frontal sinus. This is successful in only a small number of cases, due to the middle turbinate and hypertrophied mucous membrane. A high cribriform turbinectomy should be done in order to expose all the openings of the sinus of the first series. This is of the utmost importance both for diagnosis and treatment. In a few days it is usually possible to determine whether the frontal sinus or the ethmoids are diseased.

As the exploration of the antrum is the first step in the differential diagnosis of suppurative disease of the sinuses of the first series, the exploration of the sphenoid is the initial procedure in the differential diagnosis of suppurative disease of the sinuses of the second series, consisting of the sphenoid and post-ethmoid cells. Having found purulent discharge in the olfactory fissure and having eliminated surface disease, the following eventualities come to mind: (1) empyema of the sphenoid; (2) empyema of the post-ethmoidal cells; (3) combined empyema.

Sounding and washing of the sphenoid is not always easy of performance. Having determined the presence of pus in the sphenoid, the question arises as to whether the pus was secreted in the sphenoid itself or whether it acts as a reservoir for secretion of the posterior ethmoidal cells. After washing out the sphenoid, if the pus appears soon in the olfactory fissure the posterior ethmoidal cells are secreting. The sphenoid opening can be packed to prevent its filling by ethmoidal secretion and again washed out. If pus appears in the washing after previously cleansing the nose and removing the packing, we recognize that the sphenoid itself is secreting the pus. Negative results are not of much value because the post-ethmoidal cells may be empty at time of examination. Repeated negative results are necessary to exclude the post-ethmoids.

Transillumination should be done in a very dark room. Failures are frequently seen, due to the difference in the size of the sinus, to thickness of walls or previous disease. Transillumination offers us help with reference to the antrum. It is of problematic value in regard to the frontal sinus and almost useless in as far as the ethmoid and sphenoid are concerned.

The naso-pharyngoscope is also an aid, particularly in diagnosing infections of the posterior sinuses.

There can be no doubt that radiography is of inestimable assistance in diagnosing sinusitis, particularly of the frontal sinus and antrum. It shows us the shape and size of the sinus but not always the contents. Proper and correct interpretation is by no means easy and this requires the closest coöperative study between clinician and roentgenologist. Cloudiness is not necessarily evidence of disease. Cloudiness in a great many cases is due to:

1. Variations in anatomical structure.
2. Remotely healed lesions.
3. Recently healed lesions.
4. Existing lesions.
5. Faulty technic.

The following, then, should be our routine in diagnosing sinus disease:

1. Anterior and posterior rhinoscopy with suction.
2. The naso-pharyngoscope.
3. Transillumination.
4. Radiography.

Let me emphasize that nasal sinus disease in children is one of the most neglected fields in

medicine. The ethmoidal cells and maxillary antra have the greatest clinical significance in infants and young children; next in importance comes the sphenoid; last the frontal.

"ELFIN FAT REDUCING GUM DROPS" AND "SLENDS FAT REDUCING GUM"

The quacks who prey on women who are overweight, or who have convinced themselves that they are overweight, have done a thriving business in the past few years. Fortunes have been made in the sale of nostrums, most of which are utterly worthless, and a few of which are distinctly dangerous, sold for their alleged anti-fat properties. Elfin Fat Reducing Gum Drops, described as "The Chew and Grow Thin Treatment," are marketed by Pep-Giving Products Co., Inc., New York City. With the trade package come certain diet directions which alone, if followed, might result in a loss of weight. The A. M. A. Chemical Laboratory analyzed the preparation and reported that it was a "gum drop" coated with varying amounts of a mixture containing essentially sucrose and phenolphthalein flavored with peppermint. The average amount of phenolphthalein was 1.4 grains to each "gum drop." "Slends Fat Reducing Chewing Gum" is put on the market either by Slends, Inc., or by Health Products, Inc., New York City. It is claimed that the preparation contains absolutely no thyroid or any other harmful ingredient and that it can safely be given to children. At the same time it is admitted that the drug that is used in the product is extract of poke-root, while the trade package admits the presence of phenolphthalein. From its analysis, the A. M. A. Chemical Laboratory concluded that each piece of Slends is a piece of chewing gum (chicle) coated with varying amounts of a mixture containing essentially sucrose and phenolphthalein, flavored and containing a small amount of vegetable extractives. The average amount of phenolphthalein was 1 grain to each piece. From the analysis it appears that if extract of phytolacca is present, the amount is insignificant. While phytolacca has long been used in fake obesity cures, in almost every instance it is found to be present in such small quantities as to produce no physiologic effect whatever. (Jour. A. M. A., Nov. 13, 1926, p. 1665.)

LIBRARY FOR HOSPITAL PATIENTS

Dr. E. P. Lyon, dean of the medical school of the University of Minnesota, has asked members of the faculty to donate books of fiction to form a library for the use of university hospital patients.

ROENTGEN-RAY TREATMENT OF ABDOMINAL AND PELVIC TUBERCULOSIS*

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When Ausset and Bedart in 1897 made the first report of a case of tuberculous peritonitis in which the therapeutic use of roentgen rays followed the failure of many other methods of treatment, they were able to present a strikingly successful result. However, the same gratifying improvement in individual cases has been reported following various modes of treatment. In 1862 Wells reported a case of exudative tuberculosis in which spontaneous recovery followed simple laparotomy undertaken under mistaken diagnosis. Exploration with exposure of the peritoneum to air and light became the accepted vogue of treatment of tuberculous peritonitis for years. More recently the introduction of oxygen through abdominal puncture has been advocated and many good results have been obtained. The use of heliotherapy, of ultra-violet treatments and of arsenical preparations has likewise been proved efficacious in other cases. The continued use of any of these forms of treatment has shown that they are not infallible and, since it is accepted that in tuberculous peritonitis there are frequently spontaneous cures or remissions, it is still a serious question for the practitioner to determine in the individual case the most dependable form of treatment. It would seem that more complete data covering unselected cases are required as a basis for the proper evaluation of all treatments. It is with this purpose, therefore, that I have reviewed various forms of abdominal and pelvic tuberculosis encountered at the Mayo Clinic in which roentgen rays have been used therapeutically alone or in combination with other treatment.

The experimental basis for the use of roentgen rays in tuberculosis is still incomplete. Bergonie and Teissier in 1896 demonstrated that the roentgen rays were without effect on the bacillus of tuberculosis itself. Numerous experimenters have attempted to demonstrate that roentgen rays have a favorable effect in reducing the susceptibility of animals to tuberculosis or in producing a greater healing of those lesions which occur.

*Submitted for publication August 31, 1926. From the Section on Roentgen Therapy, Mayo Clinic, Rochester, Minn.

Such experiments have been conducted with guinea pigs by Lortet and Genoud, in 1896, Bergonie and Teissier, in 1897, Ritter and Moje in 1923, and by many others. While a few investigators have reported sclerosis of the peritoneum or of the pleura and a walling in of a local lesion by dense connective tissue in contrast to proliferating lesions in untreated animals, others have detected evidence of possible harmful effect from roentgen rays, namely the production of anemia, the destruction of lymphocytes, and the appearance of petechial hemorrhages in the intestines. In critically reviewing the results one cannot feel that conclusive proof has been offered of a defensive mechanism instigated by the roentgen rays. In general, the treatments have been of short duration with inadequate control groups and the dosage has been inexactly expressed so that experiments cannot be duplicated. Besides this, the unusual susceptibility of guinea pigs to tuberculosis makes the problem quite different from that encountered in the treatment of tuberculosis in human beings. Experiments which I am now conducting would indicate that in guinea pigs roentgen-ray treatments neither retard nor hasten the progress of the disease.

On the basis of such experimental work and of clinical observations, several theories of the mechanism of the effect of roentgen rays on tuberculous tissue have been elaborated. These have been well summarized by Edling in his recent clinical review of the effects of radiotherapy on tuberculous lesions. The supposition that roentgen rays destroy the substrate of the bacilli, that is, the lymphoid cells and epithelioid constituents, is advanced by Wetterer, and Jüngling in support of this assumption calls attention to the fact that those forms of tuberculosis having an abundance of lymphoid cells are most susceptible to roentgen-ray therapy, whereas the epithelioid forms of tuberculous inflammation, namely tuberculids and Kienbock's osteitis tuberculosa multiplex cystica, are much more resistant. De Quervain's hypothesis is that in the destruction of the cell due to roentgen rays ferments are disengaged which dissolve the bacilli. Bacmeister, Petersen, Bergonie and others believe that roentgen rays stimulate the formation of connective tissue which encapsulates the disease focus. Stephan assumes that small doses of roentgen rays stimulate the epithelioid cells to greater activity and that the epithelioid cell represents a defense action against the infection. This theory is supported by Ritter and Moje on the basis of their experimental work but is opposed by Holzknecht and Jüngling. A theory of detoxication has been advanced by Iselin, while Küpferle, having noted pyrexia after radiation resembling a tuberculin reaction, evolved a theory of autotuberculinization or vaccination.

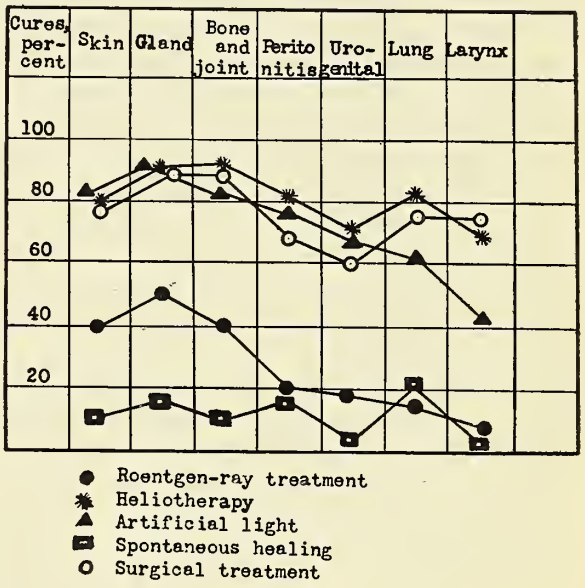

Fig. 1.

Osler and McCrae point out that the prognosis in tuberculous peritonitis must be considered from three standpoints: (1) immediate recovery, (2) later relapses with peritoneal infection, and (3) on the basis of complications and remote effect. Iselin found that total statistics as to percentage of cures mean very little unless one also considers the factors of age of the patient and degree of tuberculous involvement at the time treatment is instituted. The economic situation and intellectual level of the patient is often a factor in determining the length of time which can or will be devoted to treatment. Allbutt and Rolleston believe that about 50 per cent of the cases of tuberculous peritonitis reach spontaneous cure. Ochsner estimates that 50 per cent of cases are relieved by medical treatment. From statistics collected from various large clinics Gassul obtained the comparative results shown in Figure 1.

It will be noted that Gassul places spontaneous cure of tuberculous peritonitis below 20 per cent, and heliotherapy, artificial light and roentgenotherapy as the most effective treatments.

Bircher, an advocate of conservative treatment of tuberculous peritonitis, in 1920 reported a

series of twelve cases in which roentgen rays alone were used; in all of these operation was not advisable because of severe toxemia or other contraindication. In more than 50 per cent a favorable influence by roentgen rays was noted. He refers to an earlier series of sixteen cases reported in 1907. Of patients subjected to irradiation following operation, 43 per cent had been cured, 31 per cent improved and 25 per cent had died. Bircher concludes that roentgen rays should be used primarily only in cases of an adhesive-plastic type of peritonitis, in which operation offers little, and in cachectic cases. After operation he recommends their use when there is evidence of fluid re-forming or when recurrence is apparent.

Iselin publishes the following tabulation of end-results in cases in which irradiation was employed between 1908 and 1917, from which it is apparent that a 50 per cent cure of patients who have been traced for more than three years following treatment has been attained.

TABULATION

Abdominal tuberculosis 1908-1917 (Iselin)

Cases observed, 60	Cases observed	Later reports, cases	Patients cured		Dead
			1 to 3 years	3 or more years	
A. Accidental findings					
a. At abdominal operation	6	5	2	2	1
b. With radical operation for intestinal tuberculosis	1	1		1	
B. Tuberculous peritonitis as principal disease					
a. Simple tuberculosis of peritoneum	4	3	1	2	1 (grippe)
b. With ascites	13	10	4	6	
c. With tumor	13	9	2	6	1
d. With extensive adhesions	5	4	3	1	
e. Caseous suppurative tuberculosis	7	6	1	1	4
C. Peritonitis a symptom with					
a. Intestinal tuberculosis	7	4	1	2	2
b. Polyserositis	3	2		1	1
c. Pulmonary tuberculosis	1				1
Total	60	44	14	22	11*

*Died either during treatment or soon after

CLASSIFICATION OF CASES

In the present study, as is customary in such cases, I have grouped tuberculous peritonitis with those cases in which tuberculous intestinal lesions or other intra-abdominal foci such as tuberculous adenitis were present. C. H. Mayo in a review of tuberculous peritonitis states that this disease is rarely primary. In children it arises usually from a spread of infection through the mesenteric lymph nodes and the infecting organism is frequently the bovine type of tuberculosis. In adults the peritonitis may arise from a tuberculous ulcer of the stomach, gallbladder or spleen or from the mesenteric lymph nodes, or from an intestinal lesion which penetrates to the serosa. In women tuberculous pyosalpinx is often the primary lesion. The value of surgical removal of the primary focus in ridding the body of an overburden of disease and also in reducing the probability of reinfection has been emphasized by Mayo.

In the thirty-five cases of abdominal or pelvic tuberculosis in which roentgenotherapy was instituted between January, 1920, and December, 1924, at the Mayo Clinic, the extent and type of tuberculous involvement is indicated in the following classification:

Peritonitis without demonstrable primary foci (fourteen cases): (1) with ascites (four cases, one inoperable), (2) fibroplastic type (eight cases), (3) hyperplastic type (one case), and (4) with abscess formation (one case).

Peritonitis from primary foci (twelve cases): (1) intestinal (two cases), (2) pelvic (seven cases), (3) subacute tuberculous appendicitis (one case), and (4) mesenteric lymphadenitis (two cases).

Tuberculosis of gallbladder and localized tuber-

culosis of peritoneum between liver and diaphraghm (one case).

Retroperitoneal glands (one case).

Sinus tracts: (1) to stump of appendix (two cases), and (2) to intestinal fistula (two cases).

Epididymitis (unilateral) (one case).

In two cases the type of peritonitis was not definitely described.

Of these patients seventeen were males and eighteen females. The extremes of age at the time of registration were fourteen years and fifty-one years, four being in the second decade, sixteen in the third, ten in the fourth, four in the fifth and one in the sixth. On the basis of as accurate a history of symptoms as could be obtained, the average duration of disease before registration was two and one-half years. One patient had been ill only a few days before registration; in another case the diagnosis of tuberculous peritonitis had been verified at operation sixteen years before. With but one exception all patients had been subjected to operation at some time preceding the institution of radiotherapy, thirty-one operations having been performed here and three elsewhere.

TREATMENT

Operative treatment.—The types of operation n their relative frequency were: (1) salpingectomy (usually bilateral with partial oöphorectomy) in eight cases, (2) subtotal hysterectomy, bilateral salpingectomy and right oöphorectomy n one case, (3) cholecystectomy and appendectomy in one case, (4) stump of appendix and of mesenteric lymph nodes in one case, (5) exploration in eleven cases, (6) exploration and appendectomy in two cases, (7) ileocolostomy in wo cases, (8) excision of sinus tract in four cases, and (9) left epididymectomy in one case.

Roentgen-ray treatment.—Roentgen-ray treatments were instituted during the immediate postoperative convalescence in twenty-eight cases. In ix other cases sufficient time had elapsed (from ive months to several years) following operation or the effect of irradiation to be considered part from that of the operation.

The technic is based on a moderate voltage 135 kilovolts peak) with a relatively light filter 4 mm. or at times 6 mm. aluminum) and a subrythema or approximately three-fourths erythema dose. The abdomen is subdivided into our equal fields with four corresponding fields osteriorly, unless circumstances require other distribution. To minimize immediate roentgen-ray reaction, usually only one area is exposed to treatment each day. Such courses are repeated at intervals of one month, and should be continued when there is indication of satisfactory improvement until symptoms are definitely controlled. This requires on an average four or more courses. The technic described is very similar to that used by Iselin and by Bircher. It was frequently impossible because of financial circumstances for the patients to return to the Clinic for continued treatment. In such cases every effort was made to arrange suitable treatment near the patients' homes but this was at times impossible. Two of the patients abandoned treatment without completing the first course; thirteen had one course of treatment only; four had two courses; three had three, three had four, two had six, and seven had twelve. In only one case was roentgen-ray treatment prophylactic in nature, that being the case in which unilateral epididymectomy was performed and roentgen-ray treatment given over a period of fourteen months. In this case slight telangiectasis appeared in the skin of the right groin and scrotum, the only instance of any cutaneous injury in this series.

Uter, in a recent article, has discussed a series of cases in which higher voltage was used (200 kilovolts) with a 1 mm. copper filter. Relatively short exposures were given with decreasing dosage on repeated treatment (⅛ to 1/48 unit skin dose). He commends this method particularly because of the preservation of ovarian function in young women. From this standpoint it is of interest to note that one of the patients in the present series who had received five courses of treatment at the age of fourteen years has, after an interval of three years, established menstruation, which, although somewhat irregular at the present time, has tended to become normal. One other patient, aged twenty-four, after two courses of treatment six months apart complained of irregularity of menstruation for one year, following which it became normal again. There is always, however, a definite possibility of permanent cessation of menstruation following roentgen-ray treatment of this dosage. On the whole, the patients who have received several courses of treatment have been among those responding most favorably to treatment. That other factors, such as diet, rest, change of climate, heliotherapy and general hygienic meas-

ures, also play a large part is very evident, and undoubtedly the patients who coöperate best in carrying through their roentgen-ray treatments are those who give more attention to all details of their treatment.

RESULTS OF ROENTGEN-RAY TREATMENT

Immediate results.—In four cases improvement was very rapid and striking, one being the case in which a diagnosis had been made without operation on the basis of history and physical findings. Paracentesis had been performed twice for this patient but the fluid rapidly re-formed. Fever and diarrhea had been present for two years. The patient improved steadily for six months following one course of roentgen-ray treatment, at that time being practically free from symptoms. I have been unable to trace the patient since that time. Nineteen patients may be described as definitely improved during or within a short time following their roentgen-ray treatment, while seven apparently did not improve; one patient became worse, partly perhaps because of roentgen-ray reaction. The immediate reaction to roentgen-ray treatment, nausea, loss of appetite and feeling of weakness, was sufficient to cause two patients to abandon treatment before their first course was completed. One of these cases proved fatal in a short time; the other through rest and careful regimen has recovered satisfactorily.

There are insufficient data in two cases to warrant an opinion. A favorable response to roentgen-ray treatment is characterized by improvement in appetitite within a short period, cessation of fever and increased weight. One of the patients reports a gain of 40 pounds in six months following treatment. This experience corresponds with that of Rapp and Uter, who have reported increased weight and general improvement in the large majority of their cases.

Late results.—I was able to follow thirty-two of the thirty-five patients for periods from two to six years following treatment. Of this group fifteen were in good health with no indications of active tuberculous processes when last heard from. These patients had received an average of four and three-tenths courses of roentgen-ray treatment each. In one case the good result could not be attributed either to the operation or roentgen-ray treatment, as the symptoms of active pulmonary tuberculosis and abdominal distress continued for two years after the patient's visit to the Clinic. However, for the last two years the patient has been in good health. One of the cases was that of tuberculosis of the epididymis, in which case the treatment was entirely prophylactic; twelve courses were given over a period of about fourteen months. The patient has been entirely free from evidence of tuberculous recurrence. This group also includes a case of tuberculosis of the intestine at the ileocecal area; ileocolostomy was followed by five courses of roentgen-ray treatment. In five of the cases the result was classed as partially satisfactory. Two of the patients have been entirely relieved of abdominal symptoms but show evidence of active pulmonary tuberculosis. The other patients, while in fair general health, still suffer from occasional nausea and abdominal or pelvic pain. Ten of the group have died and one patient remains in as poor health as when first seen at the Clinic. This patient had been operated on at nine years of age, sixteen years prior to her visit at the Clinic. She was given only one course of roentgen-ray treatment and, because of poor financial circumstances, has been unable to follow up systematic treatment since then. Her health still remains very poor. Of the ten patients who have died, one died following a second operation for removal of an abdominal sinus tract and closing of a fecal fistula. Another patient died after being in very good health for three years; her husband reported the death to be due to the effects of high blood pressure. According to his statement there was no evidence of return of the tuberculous process. Since, however, I am unable to verify the circumstances I have classed the case with the group of unfavorable late results.

A study of the individual histories of the group affords definite evidence of instances of improvement, following roentgen-ray treatment, in 66 per cent of the cases. The continued well-being of patients suffering from tuberculosis is dependent on many factors of hygienic living, avoidance of overfatigue and freedom from intercurrent infections. Patients in good health after an interval of from three to five years are practically without exception those who have intelligently availed themselves of all accessible methods of treatment and have continued to regulate their activities according to medical advice. From the statistics of a small group reported here, roentgen-ray treatment in itself has apparently not increased the percentage of continued cures in

cases of abdominal or pelvic tuberculosis over that obtained by other methods. However, roentgen-ray treatment from its average tendency toward amelioration may well be considered a method worthy of thorough trial in cases of abdominal or pelvic tuberculosis.

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SOME OBSERVATIONS ON TRYPARSAMIDE IN THE TREATMENT OF NEUROSYPHILIS*

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Tryparsamide, synthesized in 1915 by Jacobs and Heidelberger, was subsequently developed by the Rockefeller Institute, and, after thorough laboratory and clinical investigation, has finally been released to the profession. It is a white crystalline powder, is readily soluble in water and admirably suited for intravenous adminstration. It contains 24.57 per cent arsenic; its dose for an adult averages two to three grams weekly; its spirochetal action is relatively feeble and for that reason is not suitable for treatment in early syphilis. It is given alone, or in connection with arsphenamine, mercury or bismuth. The favorable actions produced by the drug, according to Brown and Pearce, are essentially of the same order as the change that occurs in spontaneous recovery. The remarkable feature of its action is, therefore, its ability to augment and hasten this process. According to Voegtlin, it is markedly superior to arsphenamine and neoarsphenamine in penetrating the nervous system. It has very little local or general irritant action upon the tissues, and cumulative effects are infrequent.

The sole disadvantage of the drug is a tendency to cause amblyopia, which is usually transitory and may rarely be permanent. For that reason caution should be used in its administration, especially during the first few treatments. Records should be made of the fundi and visual fields, and one should be on the lookout for subjective symptoms, such as blurring, flashes of light and the sensation resulting often from looking at bright snow. These should be a warning for a discontinuance of the drug for a time, and if objective evidence of visual damage is present the drug should, for the present at least, be withheld.

To those who are daily forced to deal with the difficulties of treating neurosyphilis, a new approach and aid in dealing with this problem will be welcome. Stokes, writing in 1924, remarked that a new drug for the treatment of neurosyphilis must offer something distinctive on the following points:

*Read before the Ramsey County Medical Society, Saint Paul, September 27, 1926.

1. Clinical and serologic results when other methods fail.
2. Few complications and a greater margin of safety than older methods.
3. Lessened expense, discomfort, loss of time and inconvenience for the patient.
4. Permanence of results.

It has been known for some time that tryparsamide has proved satisfactory on the first three points, and I believe it is now being demonstrated that it satisfactorily answers the fourth.

During the last decade definite progress has been made in the treatment of neurosyphilis and it must not be inferred that tryparsamide will supplant these methods. The field of its greatest usefulness consists of the old cases of neurosyphilis and paresis. Many men are using the combination of arsphenamine and tryparsamide in early cases with gratifying results. Mercury, bismuth and the iodides are as valuable as ever, while intracisternal and intraspinal therapy will continue to have their definite indications, although their fields of usefulness have undoubtedly been restricted. In a series of twenty-four cases, consisting of six paretics, three tabes, and fifteen neurosyphilitics, a general gain from six to twenty pounds, and a marked decrease in pleocytosis was obtained within eight to ten injections. In one case of neurosyphilis, having a four plus Wassermann of the spinal fluid, a luetic gold curve and a slight increase of cells, a complete reversion to normal was obtained in six injections. One case of tabes, with gastric crisis of two years duration, received prompt symptomatic relief by the eighth injection, after failure in two years time in receiving relief from arsphenamine, mercury and bismuth. Of six cases of paresis, clinical improvement has been secured in five. Two had prompt remissions, and continue to hold them. One far advanced case died of pneumonia during treatment. One patient with an old tabes complained of a slight blurring, which promptly disappeared on discontinuing the drug. No optic atrophy or objective findings of visual damage have occurred.

These findings correspond to those of Solomon and Veits, who also obtained a marked decrease in the cell count, a gain in weight, and an occasional reduction of the Wassermann and colloidal gold reaction promptly from tryparsamide. They have also shown that it is often necessary to give continuous treatment for a year or longer, before either good serologic or clinical results can be expected. In general they have obtained a more rapid and marked clinical improvement with tryparsamide than with older methods. Their clinical results have not been as favorable in the old cases of tabes, with marked signs of degeneration of the spinal cord, as in those of early paresis which have shown remissions and continued to hold them.

The following cases of paresis are probably more illustrative. They came under my observation while working recently in Solomon's clinic, and I acknowledge my gratitude for his allowing me to present these results:

Case 1.—J. B. A., male, aged 30, began in February 1925 to have spells of headache and dizziness. He received the usual arsphenamine and mercury treatments until June 7, 1925, when he had a convulsion in his office. He was admitted to the hospital in an unconscious state, and after gaining consciousness was at first unable to talk. During the following week he became more confused and restless, and finally became so unmanageable that he was transferred to the Psychopathic Hospital. His neurological examination showed irregular pupils, which reacted very sluggishly to light; reflexes sluggish, but present; blood Wassermann positive; spinal fluid Wassermann positive to .4 c.c.; globulin three; cells three; gold sol. 555543000. The diagnosis was general paresis, and tryparsamide three grams weekly was begun. He gradually recovered from his confusion and other mental defects, and in three weeks was acting normally in the hospital. January 16, 1926, his blood Wassermann was doubtful; spinal fluid Wassermann positive to 1 c.c.; cells three; gold sol. 554430000. By July 1926, his blood and spinal fluid Wassermann were negative; gold sol. 44432000. He continues in remission and conducts his business normally one and a half years after onset. Mentally he is markedly improved. He still continues treatment.

Case 2.—H. W., a white male, aged 45, developed involvement of the nervous system in December 1921. He was under intravenous and intraspinal treatment until April 1923. During this time he gradually declined in mentality, his memory became poor, his judgment and insight disappeared, he became depressed and then delusional, and was admitted to the hospital in May 1923. In the hospital he conducted himself in a quiet and orderly manner. He felt fine and said he had no trouble. One of his delusions consisted of the thought that he had $12,000.00 and that he was doing his work better than he ever had before. He felt that he could do anything. His grasp of general information was poor. Physically he was well nourished; he had Argyll Robertson pupils, and the right one was irregular; he had a slight facial tremor; his gait and station were good; his blood and spinal fluid were positive, the spinal fluid to .05 c.c; positive globulin; cells 43, and gold sol. 555554300. His diagnosis was general paresis. In June 1923, tryparsamide, three grams weekly, was begun, and he still was receiving the drug when I saw him in 1926. He gradually recovered and within a

year began work. By April 1926 his spinal fluid was practically normal, with the exception of a small amount of globulin. In July 1926, he was still working as a carpenter and able to perform his work efficiently.

Case 3.—A. G., a male, aged 52, had a chancre at eighteen, and received some treatment at that time. In 1917, he had chilly and sweating spells, and his health began to fail. In 1919, he was given six salvarsan injections. He became worse and was forced to stop work in November 1919. He deteriorated mentally, threatened suicide, and was taken to the hospital. Mentally he was confused and apathetic; he was slow and indifferent. His speech was slurred; he was disoriented for time, and he had a memory impairment for recent events. His gait was slow and slightly ataxic; his Rhomberg was marked. The right pupil was larger than the left, and the left was irregular and did not react to light. He had a tremor of the lips, hypotonus of muscles, and a general dulling of sensation. His right knee-jerk and ankle-jerk were absent. He was trephined December 1919, and a ventricular injection of arsphenamized serum was done. He had a severe reaction and became maniacal for a time. During 1920 he received four intraventricular treatments and in addition was given arsphenamine intravenously supported by intraspinous therapy. His blood was positive and spinal fluid Wassermann was positive to .05 c.c.; cells 27; gold sol. 55555541000. His diagnosis was general paresis. He improved and by July 1920 felt well and wanted to return to work. He returned to work in September at his old position as a civil engineer, and stated that he got along just as well as formerly. However, his serology at that time had shown no special improvement. In 1921 and 1922 he received arsphenamine intravenously monthly. No treatment in 1923. In 1924, his blood Wassermann was questionable; spinal fluid Wassermann positive to 1 c.c.; globulin 2; cells 2; gold sol. 5555543100. Clinically a good result so far, but no special improvement in the serology. During 1924, until August he received arsphenamine twice monthly, after which he received tryparsamide, three grams twice a month, and by December 1925 his blood Wassermann was negative; spinal fluid Wassermann was negative, and globulin and gold sol. were negative. A reversion to normal had been secured. A good clinical result had been obtained under the old methods, but his serology practically remained unimproved. He was like a man sitting over a volcano; at the time he was all right, but he did not know when it was liable to go off. He continues in remission, and is still under treatment of tryparsamide once a month. With a negative fluid his outlook is much better.

Case 4.—G. B., a male, aged 41, began in 1920 having sharp lightning-like pains in the legs and ears. His blood was strongly positive. He received treatment off and on for four years, but during 1924 he began to become very forgetful and a change in personality took place. He had a twitching of the face and a paralysis of the left arm, which lasted only a week or so. He began to have trouble in walking and fell in the street several times. He became extravagant and did not know what he did with his money. His judgment became poor, his memory failed, and there was such a change in personality that his wife was forced to leave him. He would fall asleep while working, and would lose himself on the streets. He was admitted to the hospital March 1925. His blood was positive; spinal fluid Wassermann was positive to .2 c.c. and he had a strong paretic gold curve. His diagnosis was general paresis. Intelligence test revealed him to be eleven years four months of age mentally, with an intelligence quotient of 71. He was given malaria (eighteen paroxysms.) One month after recovery from malaria his mental age was thirteen years two months, and intelligence quotient 81. Tryparsamide, three grams weekly, was begun; his fluid showed no improvement after malaria, although he had a prompt remission and kept on improving. By August 1925, he was working as a musician again, and doing well. In February 1926 there was no special improvement in the spinal fluid. He corresponded to the condition of Case 3 in 1924. He appears in better mood, and looks on life with a different attitude; he does his work well; his wife has returned to him, and they are going into housekeeping. His fluid has as yet shown no marked improvement under arsphenamine and tryparsamide, which he is receiving weekly. He continues in remission eighteen months so far, and is supporting his family.

Case 5.—F. W., age 27. His family noticed a great change in his personality beginning in 1919. Formerly he was an efficient and conscientious worker, but he gradually became shiftless and listless, was unable to carry out commands in his work, and was discharged and failed to provide for his family. His blood and spinal fluid were strongly positive, and he was placed under routine treatment until June 1923. At that time he was well developed physically. His pupils did not react to light, they were large and irregular, the right greater than the left, and both reacted sluggishly to accommodation. He had a marked slurring of his speech; his knee jerks were slightly exaggerated. His spinal fluid Wassermann was positive to .05 c.c.; gold sol. 55555540000; cells 4. Mentally he was indifferent to his surroundings, and was unable to comprehend questions, and, therefore, could not answer them clearly. He was not confused. He knew where he was, but one got the impression that his mind was much younger than his physical make-up. He answered most of the questions put to him with a silly grin. When asked whether he had a chancre, he did not seem to comprehend the question. Orientation as to time and place was complete. He had no hallucinations or delusions. Memory for present events was poor. He seemed to remember past events fairly well, and could give dates of admission and discharge from the army, date of marriage, etc. His judgment was very poor. His diagnosis was general paresis. He was placed on tryparsamide, 3 grams weekly. By December 1923 there was a decided physical improvement which was easily noticeable, and he answered questions more intelligently. In January 1924 the spinal fluid was the same as in June. He continued to improve clinically, so that in February 1924 he began coming to the clinic alone, whereas he formerly always had to be accompanied. In April he began working in a lumber yard, but had to give it up on account of severity of the work. His mental condition had not improved as much as his physical con-

dition, which was excellent, although he answered questions more promptly, and could be kept on one subject for a while, which in itself was a definite improvement. He continued treatment with no serological improvement. In April 1925 he was given malaria, but no special benefit was secured. His serology was as positive as previously, and his mental condition remained the same as before. He was again placed on tryparsamide, 3 grams weekly, and by February 1926 his blood Wassermann was negative; spinal fluid Wassermann was weakly positive to 1 c.c. of fluid and gold sol. 1331000. By August his blood was negative, and his spinal fluid had reverted to normal. The mental condition has not improved over the last year, although the net improvement since the beginning of tryparsamide was marked. His physical condition is excellent, and it presents an example of a marked pathological spinal fluid that was finally reduced by tryparsamide and malaria.

These are a few observations on the action of tryparsamide in syphilis of the nervous system. A natural tendency is always present to be enthusiastic over a new aid in solving a hard problem. However, it should be borne in mind that, in spite of all we can do, many cases of the severe forms of syphilitic infection of the nervous system will terminate fatally. The importance of making the diagnosis early and carrying out intensive prolonged treatment and using serology as a guide cannot be overemphasized.

WHY THE LIVING NEED ACCURATE RECORDS OF THE DEAD

Human life is sacred. When a human being passes out from our life it is important that an immediate record be made of all the essential details of the event—an immediate record, because it is well established by years of experience that an accurate record in all cases can not or will not be made unless the law requires it to be made at once. Such a record should include the facts relating to the exact time and place of death, the full name, age, sex, color, civil condition, occupation, place of birth, and other details relating to the individual, and also, a very important requirement, a statement by the attending physician, or by the health officer or coroner, of the cause of death. These facts may be of the greatest legal and social importance.

(1) Certificates of death, or certified copies, are constantly required in courts and elsewhere to establish necessary facts;

(2) Pensions or life insurance may depend on proper evidence of the fact and of cause of death;

(3) Titles and rights to inheritance may be jeopardized by the failure of records;

(4) Deaths should be registered that public health agencies—National, State and municipal—may know the cause of death and act promptly to prevent epidemics;

(5) Deaths should be registered promptly that the success or failure of all measures attempted in the prevention of disease may be accurately determined;

(6) Deaths should be registered that individual cities and localities may learn their own health conditions by comparison with the health conditions of other communities and determine thereby the wise course of public health activity;

(7) Deaths should be registered that homeseekers and immigrants may be guided in the selecting of safe and healthful homes.

THE DIFFERENCE BETWEEN MEMBERSHIP AND FELLOWSHIP IN THE A. M. A.

From time to time we find that many of our members are confused as to the difference between Membership and Fellowship in the American Medical Association.

The following article is therefore reprinted from the American Medical Association Bulletin for the information of our members:

ONCE MORE: MEMBERSHIP–FELLOWSHIP

Every member in good standing in any constituent state medical association, whose name is reported to the secretary of the American Medical Association for enrollment, is a member of the American Medical Association. No *member* of the American Medical Association is called on, as such, to pay any dues or to contribute financially to the Association.

Every member of the American Medical Association in good standing is eligible for *Fellowship*. To qualify as a Fellow, a member in good standing has only to make formal application for that relation and to subscribe for the Journal. Fellowship dues and subscription to the Journal are both included in the one annual payment of $5, which is the cost of the Journal to subscribers who are not Fellows.

None but Fellows are eligible for election as officers; none but Fellows can serve as members of the House of Delegates; none but Fellows can register at the annual sessions of the Association or participate in the work of its scientific sections.

On July 1, 1926, there were 92,827 names on the membership roll, 60,021 of which were duly listed on the Fellowship roster.

Members of state medical associations pay dues to those bodies, but they pay nothing to The American Medical Association. *Fellows* pay dues and subscriptions to the Journal in the sum of $5 a year, which has nothing to do with county or state dues.—Editorial, *Illinois Medical Journal,* August, 1926.

WILLIAM F. BRAASCH, M.D.

Rochester

President, Minnesota State Medical Association, 1927

MINNESOTA MEDICINE

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EDITORIAL

The New Year

The beginning of a new calendar year finds the machinery of the State Association in good working order and the newly appointed committees ready for work. A list of the new committees appears under the heading "Officers and Committees" in the front part of the journal in this issue.

Our annual meeting this year has been set for Wednesday, Thursday and Friday, June 29 to July 1, inclusive, at Duluth and we are assured the ice will be out of the lake by that time. Members wishing to appear on the program should communicate with the secretary.

Attention is again called to the fact that the State Association no longer furnishes legal services to members in malpractice suits. Each physician must decide for himself what policy he wishes to carry. He would do well to ask himself the following questions:

1. What is the financial backing of the company?
2. What experience has the company had in the defense of medical cases?
3. What service has the company given in the past?
4. What exceptions are specified in the contract?
5. Are the doctors, nurses and office assistants in my employ covered?
6. Am I protected in case my partner is sued?

In this number of the journal appears the constitution of the Association with changes proposed at the last annual meeting in bold type. Publication will be repeated before the next annual meeting in accordance with the provisions of the present constitution. The Association is acting under the new by-laws, which are also being published for the information of members. Read them.

Scarlet Fever Immunization

It is not surprising in view of the comparatively recent discovery of the scarlet fever streptococcus that a diversity of opinion exists as to the present status of scarlet fever immunization. An incredible amount of work, however, has been done along this line and it is safe to predict that we will in a short time be able to immunize against scarlet fever as satisfactorily as against diphtheria. Obviously the duration of induced active immunization against scarlet fever is at present a matter of conjecture.

The precise number of strains of streptococci capable of producing clinical scarlet fever is as yet undetermined. It is felt by some bacteriologists at least that our present methods of differentiation of bacterial strains through their cultural characteristics and of their toxins by skin or serological reactions are not conclusive. The fact that there occurs only about a 3 per cent recurrence of infection from scarlet fever clini-

cally is rather conclusive proof that a group rather than strain immunity results from an attack of the disease.

Diverse opinions as to the value of the Dick skin reaction are probably due to several factors. The amount of toxin recommended for the skin test is based on the amount of toxin which will produce positive reactions in the most susceptible. It is possible that positive reactions indicate only the most susceptible and many negative individuals may therefore be susceptible to the disease. This might well account for the occasional appearance of the disease in Dick negative individuals. Experience may very well show that a stronger toxin will more accurately differentiate the susceptible from the immune. Experience, too, in the interpretation of skin reactions is essential. Pseudo-reactions are confusing. One who has the opportunity of reading Dick tests only occasionally is necessarily uncertain in his interpretation. It is perhaps significant that in attempts to immunize large groups of children the Dick test is commonly omitted both before and after inoculation.

When it comes to the prevention of scarlet fever in contact individuals the logical method would seem to be the administration of the prophylactic dose of antitoxin as in handling diphtheria contacts. The pursuance of this method has not proven highly satisfactory, so far, partly perhaps because too small a dose has been given and partly, too, because the duration of such a passive immunity is too short (two to three weeks) for practical purposes. The desirability of avoiding inoculations with horse serum in preventive measures is an additional contraindication.

It has been conclusively proven that an active immunity to scarlet fever can be produced by toxin injection. Theoretically and practically such toxins should contain killed bacteria as well as toxin in order that antibodies may be developed not merely to exotoxins but also to the streptococci themselves and possible endotoxins. For the same reasons antitoxins produced by inoculation of the horse with bacteria as well as their toxins should be chosen for therapeutic use.

The various biological houses offer toxins to be given in increasing doses for the production of active immunity to scarlet fever. Three and four doses of varying amounts are recommended but the physician is at a loss to know how much should be given to assure a high percentage chance of immunity production. As a matter of fact this question cannot be accurately answered at the present time. The administration of a total of 850 skin test units as first used by Zingher was doubtless too small a dose. The Dicks in 1925 found that a total of 5,000 to 6,000 units produced immunity in about 66 per cent of cases and that as high as 10,000 to 12,500 units were necessary to produce immunity as shown by the Dick test in 91 per cent of cases.

We, in Minnesota, have been particularly interested in the work of Dr. Larson at the University of Minnesota Medical School with the preparation of both diphtheria and scarlet fever toxins treated with sodium ricinolate. Larson has shown that the addition of this castor oil soap lessens the toxicity of various toxins such as the diphtheria, scarlet fever and tetanus, but for some reason not the botulinus toxin. Recently Carmichael of the University of Cincinnati has reported a similar detoxifying action on ricin, the poisonous principle of the castor oil bean. This detoxifying action of sodium ricinolate, according to Larson, does not diminish the antigenic properties of the various toxins and makes possible the administration of larger doses of the toxin than would otherwise be possible.

The advantage of Larson's detoxified scarlet fever toxin is obvious in view of the reported necessity of doses aggregating 10,000 to 12,500 skin test units.

Various reports of experience with Larson's detoxified scarlet fever toxin indicate that more than one inoculation of 3,000 units (the usual dosage contained in 1 c.c. of the mixture) is necessary to produce a high enough immunity percentage for practical use. Larson himself recommends a repetition of this initial dose of 3,000 units in two to three weeks' time and preferably a third dose three weeks after the second dose. In adults half the initial dose is recommended.

Thousands of children, the majority in the Twin Cities, have been inoculated with Larson's vaccine with no demonstrable ill effects. Occasionally a slight temperature follows which lasts a few hours, and Iler and Lochead report the production of a chill in two out of 783 children treated.

Recently some 20,000 school children in Minneapolis have received combined diphtheria and

scarlet fever inoculations in three doses at weekly intervals with no deleterious results. A series of 100 children so treated showed 100 per cent immunity by the Dick test two months later. There is no theoretical reason for not using the combined vaccine although one might hesitate to recommend the administration of two toxins of this sort at one time. This innovation would simplify inoculations on a large scale.

Attention should be drawn to the importance of inoculation of children in the pre-school age as well as school children because of the danger of immune carriers infecting the younger members of the family.

An attempt has been made to sum up the present status of scarlet fever immunization in as unbiased a manner as possible. Time will clear up certain questions which cannot be positively answered at present and particularly as to the duration of immunity produced.

Is It Up to the Doctor?

For three years a semi-charitable Home for Convalescent Women has been conducted in Saint Paul by a group of young women known as The Junior League. Although a similar convalescent home in Minneapolis is well filled the Saint Paul home has not been called upon to render the fullest service of which it is capable. The question naturally arises, why?

In the middle ground between the well-to-do and those wholly dependent on free care in case of sickness there should be a need in a city the size of Saint Paul for a home for convalescent women at the very reasonable price of a dollar a day. While the average city hospital as well as private hospital patient remains in the hospital until well enough to go home, many have no homes of their own in the city nor anyone to care for them during convalescence. We feel sure that more publicity would keep the home with its limited capacity full to overflowing.

The use of the home is not limited to Saint Paul women, and physicians throughout the state may find an opportunity to render a real service to an occasional patient as well as the home by simply mentioning its existence at 577 Oakland Avenue, Saint Paul. Communications may be addressed to the Junior League Convalescent Home for Women, Miss Dickman, R. N., in charge.

COMMUNICATIONS

December 10, 1926.

THE FOLLOWING FACTS ARE CALLED TO THE ATTENTION OF THE PROFESSION:

It is evident that all physicians in the state have not familiarized themselves with the Vital Statistics Law in relation to the recording of births of illegitimate children. This is borne out by many records received for such cases which contain full information as to the father. Attention is called to Section 5356 (which defines data required to be given on birth certificates) of the law, which reads in part as follows:

"Full name of father, provided that if the child is illegitimate the name or residence of, or other identifying details relating to, the putative father *shall not be entered without his consent,* except as provided in Section 5365-A."

Section 5365-A reads as follows: "Judgment of paternity—Facts to be recorded—Whenever the clerk of the district court shall report to the state registrar that a judgment has been entered determining the paternity of an illegitimate child, the state registrar shall record the name of the father, and sufficient data to identify the judgment, in connection with the record of the birth of the child appearing in his office, and also in connection with the record of death of the child, if there be such record. A report by the clerk of the subsequent vacation of such judgment shall be recorded in like manner.

"Likewise whenever any district court shall enter a judgment that any person named on a birth certificate or death certificate, as the father of an illegitimate child, is not in fact the father of such child, the clerk of such court shall forward to the state registrar and to the local registrar of the district in which such birth or death is reported, a copy of its judgment; whereupon, it shall be the duty of such registrars to make such corrections as to the statement of paternity on such birth or death certificate, and to attach to the original, or to his record of the original, a copy of such judgment."

Section 5365-B provides that no member of the State Department of Health, nor the State Registrar nor any local registrar, or any person connected with the office of either, shall disclose the fact that any child was illegitimate, except when so ordered by a court of record. Frequently a great deal of correspondence is involved in cases of this kind which comes up for court action, and when particulars as to the father are given complications often arise. The attending physician should be relieved of all responsibility as regards furnishing information relating to the father. It is urged that no questions be asked of the mother pertaining to the father or putative father unless such particulars are filled in on the record with the father's consent.

It may also interest you to know that under the Minnesota Law the subsequent marriage of the parents of an illegitimate child *to each other* legally legitimatizes the child. Section 5365-D of the law then provides how the father may proceed in order to correct the record.

GERDA C. PIERSON, Director,
Division of Vital Statistics,
Minnesota Department of Health.

OBITUARY

Dr. J. H. Beaty

Dr. J. H. Beaty, a practising physician in St. Cloud for the past thirty years, died at the age of 56 years, Saturday, November 27, 1926, at St. Raphael's Hospital, St. Cloud, following a short illness.

James H. Beaty was born at Oak Center, Wabasha County, Minnesota, January 26, 1870, son of John H. and Mary Frances Beaty.

He attended the public and high schools of Lake City, Minn., and graduated from the College of Homeopathic Medicine and Surgery of the University of Minnesota in 1895. Since then he has been engaged in his practice in St. Cloud.

In 1900 Dr. Beatty took a postgraduate course in New York and in 1907 studied for several months in clinics of England and Germany. Dr. Beaty was a member of the Minnesota State Homeopathic Institute, of the American and Minnesota State Medical Associations and of the Stearns-Benton County Medical Society, of which latter organization he had been president.

He was an enthusiastic member of the commercial organizations of St. Cloud and was one of the founders of the St. Cloud Improvement Association, which was reorganized into the Commercial Club and later the Chamber of Commerce. He was a member of the Library Board and affiliated with the Masons and Elks.

Dr. Beaty was devoted to the ideals of his profession, in the practice of which he was very liberal in giving service to the needy. As a physician, as a citizen, and as a man he was very highly esteemed not only in St. Cloud but in territory adjacent to the city and in other parts of Minnesota where he was well known.

Dr. Beaty is survived by his wife and adopted son; by three brothers, George, William and John Beaty of Lake City; one sister, Mrs. Addie Selover, Long Beach, Cal., and Frank Beaty, a nephew, Lake City.

Dr. L. C. Weeks

The epic figure of the country doctor recedes a little further with the death in Detroit Lakes, Minn., Sunday, Dec. 19, 1926, of Dr. L. C. Weeks.

Deserting good prospects for city practice in Chicago he went to Northwestern Minnesota 30 years ago and has served his community since.

Last summer when he had returned from a vacation following a paralytic stroke a community-wide celebration for his recovery was held. The mayor, the ministers of the town, fellow physicians from Detroit Lakes and nearby towns and 500 friends attended.

The second stroke which Sunday proved fatal occurred at the Minnesota-Michigan football game this fall. He was 57 years old.

The history of Dr. Weeks' practice in Detroit Lakes is the history of medical development in Northwestern Minnesota. Born in Hartland, Waukesha county, Wisconsin, in 1869, he was educated at Litchfield, Minn., high school. He began his medical education at the University of Minnesota, transferring in 1890 to Rush Medical college, Chicago, and graduated there in 1892. After serving for 18 months as house physician of the Presbyterian hospital in Chicago, he was appointed instructor in anatomy and physiology at Rush.

Although bright prospects were opening before him as a city physician, Dr. Weeks decided to become a country doctor. He came to Detroit Lakes when it was a village of 1,500 people and when the country around was undeveloped.

In 1905, when Dr. Weeks built and equipped the first hospital in Detroit Lakes, he met with indifference. The hospital was considered a radical innovation. Patients were taken to larger towns for treatment, and as a result, in 1909 the hospital was closed.

The doctor persevered in his plans. Many difficult operations had been performed and the fame of the country doctor was spreading. In 1919 the hospital was reorganized in the original building by community doctors, with the co-operation of Dr. Weeks. Since then the hospital has been successful.

Honors then came to him. Among these was his election to a fellowship in the American College of Surgeons in 1921.

Dr. Weeks is survived by his wife and three children.

OF GENERAL INTEREST

Dr. Walfred Johnson is now located at Sauk Center, Minnesota.

Dr. O. O. Larsen has moved from Detroit Lakes, Minnesota, to Fergus Falls.

Dr. J. W. Andrist, formerly of Owatonna, Minnesota, is now located at San Diego, California.

Dr. Robert Guilmette, formerly of Canton, Minnesota, is now practicing in Hankinson, North Dakota.

Dr. J. G. Millspaugh of Little Falls has gone to Arcadia, California, where he will spend the winter months.

Dr. A. E. Baldwin has moved his practice from Brownsdale, Minnesota, to Houston, Minnesota, where he is now located.

Dr. P. E. Hermansen, formerly associated with Dr. R. A. Beise at Brainerd, Minnesota, is now located at Ivanhoe, Minnesota.

Dr. L. W. Gange has announced the removal of his office from Aberdeen, South Dakota, to 508 Lowry Building, Saint Paul, Minnesota.

The Rodda-Robb-Wilder clinic, formerly of the Abbott hospital, Minneapolis, is now established in their new quarters at 1801 Lyndale Avenue South, Minneapolis.

Dr. H. Kennon Dunham of Cincinnati addressed the Lymanhurst hospital staff in Minneapolis, Saturday, December 4, on the subject "X-ray work in tuberculosis examinations."

Dr. William H. Rumpf, Jr., has announced his association in practice with Dr. Everett C. Hartley with

offices in the Lowry Building, Saint Paul, for the practice of his specialty, obstetrics and gynecology.

The clinical laboratory of the Minneapolis Clinical Association is the only laboratory in Minnesota appearing on the approved list of clinical laboratories recently issued by the American Medical Association.

Announcement has been made of the marriage of Dr. Alfred Hoff of Saint Paul to Miss Marjorie Monkhouse of that city, which took place in December. Dr. and Mrs. Hoff are now at home at 1011 Goodrich Avenue, Saint Paul.

Dr. M. J. Kern of St. Cloud was elected coroner of Stearns County for a period of four years at the recent general election. Dr. H. A. Rinault of St. Joseph, who has been coroner of Stearns County for thirty years and who is now 71 years of age, did not file for re-election.

Plans to stamp out charlatanry in Wisconsin have been announced by Dr. Robert E. Flynn of La Crosse, secretary of the Wisconsin Board of Medical Examiners. The drive was started in Milwaukee, Friday, December 3, and will be continued until every quack doctor and pseudo-medical practitioner is put out of business, it was announced.

Dr. John L. Shellman of Saint Paul was elected president of the Minnesota Academy of Ophthalmology and Otolaryngology at the October meeting of the society. Other officers for the coming year are: Dr. Walter E. Camp, Minneapolis, first vice president; Dr. F. N. Knapp, Duluth, second vice president; Dr. John H. Morse, Minneapolis, secretary-treasurer.

At a recent meeting of the Chicago Federation of Labor a charter was granted to the Diagnosticians' union, composed of physicians of Chicago employed by the city health department. The motive for forming such a union, it was stated, was to demand an increase in remuneration for services rendered. Dr. M. J. Sullivan, a delegate for the physicians' organization, asserted that the health department paid its employes $25.00 a week and allowed a physician only 3 cents for a call.

Dr. F. W. Schlutz, professor of pediatrics at the University of Minnesota, medical school, will represent the American Pediatrics Society at the fifth Pan-American Child Congress at Havana, Cuba, February 13 to 20, 1927. Dr. Schlutz will present a paper on the influence of child welfare agencies upon the death rate of a community. The results and experiences gained from child welfare agencies in Minnesota and its larger cities will form the basis of his report. Dr. Schlutz has also been invited by the Argentine Pediatrics Society and the Argentine Medical Society to be one of the official guests at a meeting of these groups in Buenos Aires in July.

NEWS FROM THE MAYO CLINIC BULLETIN

Dr. Oscar Gans, Professor of Dermatology and Dermatopathology, University of Heidelberg, gave the second of the series of Mayo Foundation lectures in the Clinic Assembly Room on the evening of November 23. His subject was, "Skin manifestations of the disorders of the sympathetic nervous system." Immediately following the lecture *Dr. Albert Kuntz,* Professor of Anatomy, St. Louis University, gave a Mayo Foundation lecture on "Muscle tonus in relation to sympathetic innervation."

Dr. F. M. Constans, formerly of the Mayo Clinic, announces his association with Dr. H. E. Binger, 824 Lowry Building, St. Paul, for practice limited to eye, ear, nose and throat.

Interurban Surgical Society: The meeting of the Interurban Surgical Society was held in Rochester November 19 and 20.

Mayo Foundation Lecture: Dr. Donald D. Van Slyke, member of the Rockefeller Institute, gave a Mayo Foundation lecture in the Mayo Clinic lobby on the evening of November 22. His subject was, "Urea excretion in nephritis."

Minnesota Society of Internal Medicine: The first meeting of the Minnesota Society of Internal Medicine was held in Rochester November 8. There was a program of clinics and papers.

Dr. L. E. Barnett, Emeritus Professor of Surgery, University of Otago, New Zealand, visited the Mayo Clinic on his return from a trip to England, where he attended the meeting of the British Medical Association. Dr. Barnett is President of the Australian branch of the British Medical Association.

Dr. Donald D. Van Slyke, of the Rockefeller Institute, New York City, gave a Mayo Foundation lecture in Rochester, November 22. His subject was "Urea excretion in nephritis."

Dr. H. W. Meyerding was elected president of the Clinical Orthopedic Society at the meeting in Detroit, November 5.

Dr. W. D. Sheldon was elected president of the Central Neuropsychiatric Society for the coming year at the October meeting of the society in Cincinnati.

$100,000 OFFERED FOR CONQUEST OF CANCER

Two prizes of $50,000 each have been offered by William Lawrence Saunders of New York for discoveries of the causation, prevention and cure of cancer. The offer was made on December 15, 1926, and will stand for three years. The donor expects to renew it, if necessary.

Mr. Saunders is Chairman of the Board of Directors of the Ingersoll-Rand Company, Director of the Federal Reserve Bank of New York and President of the United Engineering Company.

The decision upon which the awards will be made is to be reached by the American Society for the Control of Cancer and approved by the American Medical Association and the American College of Surgeons.

It is Mr. Saunders' idea that discoveries are not always made by experts and that "through the lure of a reward this serious problem might be solved through the genius of a lay mind, by chemists or through unorganized medical sources."

The offer of Mr. Saunders to the American Society for the Control of Cancer has not yet been formally acted upon by the Society, and it is impossible to say at this time what rules other than those proposed by Mr. Saunders will control the decision. Information as to how persons who wish to present their discoveries for consideration should proceed will be announced later.

Mr. Saunders made his offer known through a letter to Dr. C. N. B. Camac of New York under date of December 13, 1926, and read by Dr. Camac at a dinner given in the interests of the American Society for the Control of Cancer by President Nicholas Murray Butler of Columbia University and Honorable Charles Evans Hughes.

SPECIAL COURSES FOR PHYSICIANS IN TREATMENT OF VENEREAL DISEASE

Surgeon General Hugh S. Cumming has announced that the U. S. Public Health Service, as a part of its coöperative work with State health departments in the control of venereal diseases, will give special courses of training to physicians, clinicians, and health officers at its venereal disease clinic, Hot Springs, Arkansas.

This clinic, which is operated by the Public Health Service in a new building belonging to the Department of Interior, offers exceptional opportunities for the study of the venereal diseases, especially in clinical and laboratory diagnosis, treatment methods, and clinic management. Here, studies of the many practical and scientific problems connected with venereal disease control are carried on. Last year 3,570 indigent persons were examined at the clinic; 3,064 cases of syphilis and gonorrhea were diagnosed and given a total of 32,315 treatments.

Surgeon General Cumming states that the instruction courses which now are offered will consist of a series of lectures by the Director and the Consulting Specialists attached to the clinic, demonstrations in laboratory and treatment methods, and practical experience in the diagnosis and treatment of syphilis and gonorrhea in various stages through participation in the routine work of the clinic. New classes of not more than ten physicians will form on the first of each month and the course will continue for a minimum of thirty days. Engraved certificates will be presented by the Public Health Service to those who satisfactorily complete the thirty-day course.

Fees are not charged for this course of instruction. The individual physician, however, will necessarily provide his own travel expense to and from Hot Springs and his living expenses while there.

Interested physicians should write to Dr. A. J. Chesley, Secretary State Board of Health, State Capitol, or to the Surgeon General, U. S. Public Health Service, Washington, D. C., for information or application blanks. Applications should be indorsed by the State health department in which the applicant resides before being submitted to the U. S. Public Health Service.

The American College of Surgeons desire a complete set of the proceedings of the Minnesota State Medical Association. The Secretary has only one such set. We desire proceedings for the years 1871 to 1900. If you have copies that you would like to have turned over to the College of Surgeons, please send them to Dr. E. A. Meyerding, Secretary, 11 West Summit Avenue, Saint Paul.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

NOTICE TO MEMBERS

The Fifty-Ninth Annual meeting of the Minnesota State Medical Association will be held in Duluth Thursday, Friday and Saturday, June 30, July 1 and 2.

Those members who desire to present papers at this meeting must have same in the hands of the *Sectional* Secretary before March 1, for their consideration.

Secretary of Section on Medicine,
Dr. J. A. Myers,
730 LaSalle Building, Minneapolis, Minn.

Secretary of Section on Surgery,
Dr. H. W. Meyerding,
102-110 Second Avenue S. W.,
Rochester, Minnesota.

The Committee wishes to make the *X*-Ray Exhibit as interesting as possible, and those who have films of exceptional interest are asked to get in touch with Dr. W. A. O'Brien, University of Minnesota, Minneapolis, Minnesota.

A. M. A. SCIENTIFIC EXHIBIT

Arrangements are being made for the Scientific Exhibit for the Washington, D. C., Session of the American Medical Association, May 16-20, 1927. The Scientific Exhibit will be located in the Washington Auditorium; in this building will also be housed the Registration Bureau, Technical Exhibits, and Motion Picture Theater.

A fully equipped Motion Picture Theater for talks illustrated with lantern slies and motion pictures will be an adjunct of the Scientific Exhibit. It will be located on the floor above the Exhibit. Unless there are exceptional reasons, the length of the periods will be limited to 2 quarters (½ hour).

The Committee will make no assignments previous to March 10th, in order that the amount of space available may be apportioned to the best advantage to all concerned. All applications must be received at the A. M. A. headquarters before this date.

NORTHWEST CONFERENCE ON CHILD HEALTH AND PARENT EDUCATION

The Northwest Conference on Child Health and Parent Education will be held in Minneapolis, February 24, 25 and 26, 1927, subject to revision.

The officers of the Conference are as follows:

President, Mr. Willis K. Nash; president-alternate, Mr. William F. Kunze; vice-presidents, (1) Mrs. Frank A. Chamberlain, (2) Mrs. John S. Pillsbury; secretary, Dr. Richard Olding Beard; treasurer, Mr. Thomas F. Wallace.

The Executive Committee will consist of the officers and of Mr. Sumner T. McKnight, Mr. C. J. Winton, Mr. Benjamin H. Woodworth, Dr. Henry Wireman Cook, and Mrs. Folwell W. Coan.

The Secretary of the Conference, Dr. Richard Olding Beard, will be the Secretary of all Committees.

All the business of the Conference will be transacted through the office of the Hennepin County Public Health Association, and all bills to cover the expenses of the Conference will be authorized and approved by him and by the President-Alternate of the Conference.

A Guaranty Fund will be provided to cover these expenses.

At a meeting of the Joint Committee on the Conference, under date of December 1, 1926, the following sub-committee on "Reception of Visitors" was appointed:

Mrs. Frederick G. Atkinson, Chairman; Mrs. Felix E. Moses, Mrs. Henry E. Atwood, Mrs. Mary Powell, Mrs. James Blake, Mrs. C. T. Brown, Mrs. J. F. Lynch, Mr. Walter C. Robb, Mr. Otto F. Bradley, Dr. Walter R. Ramsey, Dr. Francis E. Harrington, Dr. Ralph T. Knight.

THE MINNEAPOLIS SURGICAL SOCIETY

The regular meeting of the Minneapolis Surgical Society will be held Thursday, January 6, 1927, at 8:00 p. m., in the Hennepin County Medical Society Library in the Donaldson Building. The following papers will be read:

1. Presentation of cases.
2. Surgery in Gastric Ulcer, Dr. Verne S. Cabot.
3. Diverticula of the Duodenum, Dr. Wm. P. Herbst.
4. Surgical Pathological Exhibit.

All physicians are cordially invited.

LYON-LINCOLN COUNTY MEDICAL SOCIETY

At the Lyon-Lincoln County Medical Society meeting held at Marshall, Minnesota, Thursday, November 18, the Society moved to give free medical examinations to all children in the city and rural schools and to make the Schick Test for diphtheria immunes without charge.

Election of officers was held as follows: Dr. A. D. Hoidale, Tracy, president; Dr. H. M. Workman, Tracy, secretary and treasurer; Dr. E. J. Sanderson, Minneota, delegate.

Dr. W. F. Braasch of the Mayo Clinic addressed the Society on "The General Practitioner and His Relationship to the Practice of Urology."

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Twenty-seven members of the Stearns-Benton County Medical Society met at the Community Hall at the Girls School at Sauk Centre, Minnesota, Thursday evening, November 18. A dinner was furnished through the courtesy of Mrs. Stewart, Superintendent of the School. The following program was presented:

Child Health Survey, Dr. J. H. Beaty, St. Cloud
Discussion, Dr. W. B. Richards, St. Cloud
Surgical Kidney, Dr. P. E. Stangl, St. Cloud
Discussion, Dr. Chas. Pierce, Wadena
Pierce Knee Splint Demonstration, Dr. Chas. Pierce, Wadena
Placenta Previa, Dr. R. H. Sweetman, Sauk Centre
Discussion, Dr. F. J. Schatz, St. Cloud
Institution Treatment of Venereal Disease, Dr. C. G. Arvidson, School Physician
Discussion, Dr. B. Clark, St. Cloud, Dr. J. Du Bois, Sauk Centre

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

The forty-fifth semi-annual meeting of the Southwestern Minnesota Medical Society was held Thursday, November 18, 1926, at the Southwestern Minnesota Sanatorium at Worthington, Minnesota.

The principal speakers on the program were Dr. Walter Alvarez of Rochester, who addressed the society on "The diagnosis of gastro-intestinal disease from a good history," and Dr. E. T. Bell of the University of Minnesota, whose subject was "Heart and kidney and their relationship in disease."

Officers elected for the coming year are: President, Dr. A. G. Chadbourne, Heron Lake, Mnn.; vice president, Dr. James McCrea, Fulda, Minn; secretary-treasurer, Dr. E. G. McKeown, Pipestone, Minn.

The following Censors were elected for three years: Dr. C. P. Dolan, Worthington, for Nobles County; Dr. L. A. Williams, Slayton, for Murray County; Dr. J. T. Rose, Lakefield, for Jackson County.

The Association voted to have a University Extension Course next spring or summer.

The next meeting place will be Fulda, Minn.

INTER-STATE TRIP ABROAD

In May, 1927, a group of physicians with members of their families from the United States and Canada, under the direction of the Inter-State Post Graduate Medical Association of North America, will sail from New York to visit the following leading medical centers of the Old World:

London, Edinburgh, Oslo, Stockholm, Upsala, Lund, Copenhagen, Hamburg, Leipzig, Munich, Strasbourg, Heidelberg, Frankfort and Paris.

This will be the third year that foreign assemblies have been conducted under the auspices of this organization. Those of 1925 and 1926 were exceedingly successful and of great benefit to the physicians who took advantage of them. No doubt the 1927 assemblies will meet with equal success.

In including Norway, Sweden and Denmark in the itinerary the Association is offering the profession an exceptional opportunity to visit and study in some of the finest clinics in the world.

The group of physicians will be limited to a number that can be comfortably accommodated in the clinics, which will cover the entire field of medical science.

The price of the trip will be kept as low as possible and yet furnish first-class accommodations. It will be between $1,000.00 and $1,100.00. All physicians who are in good standing in their State or Provincial Society may register. Further information may be obtained from the Managing-Director, Dr. William B. Peck, Freeport, Illiniois, or the Travel Department of the American Express Company, 65 Broadway, New York, N. Y., who have charge of the transportation.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of October 20, 1926

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, October 20, 1926, at 8 p. m. Dinner was served at 7 p. m.

The meeting was called to order by the President, Dr. F. E. Burch. There were 31 members and 1 visitor present.

The minutes of the September meeting were read and approved.

Upon ballot the following members were elected to the Academy:

Dr. F. J. Hirschboeck, Duluth, Associate Member.

Dr. Henry E. Michelson, Minneapolis, Active Member.

Dr. Arthur W. Ide, St. Paul, Active Member.

The scientific meeting consisted of the following case reports:

Dr. Wm. Lerche (St. Paul) showed slides of cases of mediastinitis caused by infected mediastinal lymph nodes.

Surgical measures for the drainage of a mediastinal abscess are necessary as soon as diagnosis is made. In order to be able to make an accurate diagnosis, knowledge of the topography of the mediastinal lymph nodes is essential.

Lantern slides illustrating the topography of various groups of mediastinal lymph nodes and cases of suppurative and non-suppurative mediastinitis were shown.

Dr. E. M. Hammes (St. Paul) reported two cases as follows:

(*a*) The patient was a male, aged 41, right-handed, a physician, and was seen in consultation with Drs. Ide and Shillington on October 11, 1926.

The family history was negative.

The personal history shows that he has been a heavy drinker for years, especially during the past six months. He took both alcohol and whisky in fairly large quantities. In 1918, while in service, he had a severe headache, without any other symptoms, which continued for two weeks, and at which time a lumbar puncture was performed. The spinal fluid was normal. He denies venereal disease. In 1920 he had an acute otitis media with some discharge for about a week.

His present complaint dates back about one year when both his wife and his partner noticed a slight exophthalmos of the *left* eye, which continued up to the present time. About six months ago he began to complain of an occasional headache, always localized over the left eye and deep in the orbit. The pain was described as severe and boring in character. This pain gradually grew worse in intensity, but remained confined to the left orbit. About four months ago he would have occasional attacks of nausea and vomiting, associated with dizziness. This occurred most frequently in the morning and was thought to be due to an alcoholic gastritis.

During the past two months he would have spells while driving his auto when the two sides of the road would gradually converge at a distance of about one-quarter of a mile, and the angle thus formed would come toward him until it almost reached his automobile, then his vision would become blurred and he would have to stop driving for a few minutes. After this his vision would return to normal. At first these spells would occur about once a week, but during the past few weeks they have been as frequent as three a day.

During the past month the pain in the left orbit has been of undue intensity. However, with small doses of veronal he got sufficient sleep at night.

On October 5, while attending an ordinary obstetrical case (no instruments used) he became dizzy so that he fell over on the operating table. With assistance he walked to another room where he went to bed and remained for five days. During this time it was noticed that his pulse was as slow as 52.

On October 11 he was admitted to the Northern Pacific Hospital. At this time the physical examination was negative. All laboratory findings were negative except that he had a leucocytosis of 12,000. His blood pressure was systolic 135, diastolic 80. The blood Wassermann was normal. The pulse varied from 80 to 54. During that night, after taking 5 grains of veronal, he was quite confused and had an occupational delirium. During that time he delivered several Indian women.

I saw him the next morning, at which time his mental condition was normal. He seemed slightly euphoric, but his wife said this was perfectly normal for him. On further questioning, his wife said that as far as she could ascertain his mentality had been perfectly normal throughout, that he had carried on successfully a large practice until October 4 when he developed the dizzy attack.

The neurological examination was negative throughout except for a slight questionable weakness of the left angle of the mouth. There was a slight left exophthalmos. His blood pressure was, systolic 135, diastolic 80. A lumbar puncture was performed and 25 c.c. of clear fluid were removed. The spinal fluid pressure was 32 mm. of mercury, 10 cells, a negative Wassermann, a negative colloidal gold curve, and a trace of globulin.

Following this lumbar puncture the pain in the left orbit definitely improved for ten hours and the patient slept well that night. The pain in the left orbit returned the following day with undue severity. Another lumbar puncture was done at 5 p. m. when 40 c.c. of spinal fluid were removed. Examination of this fluid was negative except that it contained 700 cells, mostly polymorphonuclear leucocytes. The intra-orbital pain subsided entirely for five hours and he felt better than he had for several weeks.

At 10 p. m. he developed a very severe diffuse headache and became extremely restless. It was necessary to apply ice constantly to his head in order to get some relief. About 3 a. m. his restlessness subsided. About a. m. he suddenly became stuporous and markedly cyanotic. At 10 a. m. his blood pressure was, systolic 85, diastolic 110. He was stuporous and he had some convulsive twitchings of the left arm and hand. At 1 a. m. his blood pressure was, systolic 220, diastolic 20, pulse 80, respiration irregular.

The neurological examination was negative throughout except for an increased knee jerk on the left side and a positive Babinski on the right side.

Another lumbar puncture was performed and 30 c.c. of slightly cloudy spinal fluid were removed. His breathing became more regular and the cyanosis improved. After about 15 c.c. of spinal fluid had been removed the blood pressure dropped to, systolic 148, diastolic 90. His general condition remained quite satisfactory for 30 minutes when he suddenly died from respiratory failure.

An examination of the fundi made by Dr. Louis Nelson on the 12th of October showed an edema of the right nerve head and a marked edema of the left nerve head, with hemorrhage in the left fundi. His examination of the ear was negative.

Our diagnosis at first was either a cerebritis, due to chronic alcoholism, or a brain tumor, probably left frontal. Following the second lumbar puncture, marked cellular increase was noticed in the spinal fluid, and we felt perhaps we were dealing with a ruptured brain abscess. When the sudden stupor developed we felt perhaps he had a glioma with softening, with hemorrhage into the substance of the tumor mass.

A postmortem by Dr. E. T. Bell, pathologist of the University of Minnesota Medical School, revealed the following:

"The scalp and calvarium are normal. There is no excess of fluid beneath the meninges. The surfaces of the brain are markedly flattened so that the external surfaces are practically smooth. The vessels are distended with blood. There are no areas of softening palpable. The cut surface shows a fairly circumscribed tumor mass in the right frontal lobe, below and anterior to the anterior end of the right ventricle. On section this tumor appears to be made up of a number of small cysts up to 1.5 cm. in diameter. Each of these cyst-like cavities contains a grapelike, clear, sharply encapsulated mass, which on section contains a tenacious mucoid material. The cysts suggest those associated with echinococcus. The central portion of the tumor mass is firm, apparently necrotic in some portions. There is no hemorrhage. Medially the tumor mass can be readily separated from the brain substance. Elsewhere the brain is apparently normal. There is no hydrocephalus. The base of the skull shows marked flattening of the optic nerves. No other abnormalities. The pituitary is normal.

"Microscopic sections of the tumor show a degenerated glioma; many fat granule cells; nothing to suggest echinococcus disease.

"Diagnosis: Cerebral glioma."

This case presented several interesting points. The localization of the pain and the evidence of increased intracranial pressure manifested by the choked disc, more marked in his left fundus, strongly suggests an intracranial lesion in the left cerebral hemisphere and, because of the paucity of symptoms, in his left frontal region.

Another interesting point was the normal mentality which this patient presented throughout the course of his illness until three days prior to his death.

DISCUSSION

Dr. C. Eugene Riggs (St. Paul): This report of a frontal tumor, by Dr. Hammes, is interesting and most unusual because of the absence of all symptoms characteristic of involvement of the frontal area. The diagnosis of frontal lobe tumors may be extremely difficult or even impossible to make as they may show no localizing symptoms whatever. Mental disturbances or mental deterioration common to other forms of dementia are usually present in a growth affecting this region. The chief diagnostic criteria are these symptoms and the absence of a sign of a tumor elsewhere. Frontal tumors, as reported by Dr. Hammes, are exceedingly rare—so rare that the history and pathological findings of this case merit publication.

Dr. W. A. Jones (Minneapolis): I am almost persuaded that I know very little about brain tumors except in a few instances. There is no more disheartening or uncertain field of research or investigation that one can work in for the simple reason that one never knows how many tumors may be found.

I once localized, and Dr. Herbert Jones operated, a cerebellar tumor. During the administration of the anesthetic the boy died temporarily on the table, probably due to the dropping down of his brain stem into the foramen magnum which cut off his vagus nerve. Everything was done to resuscitate him but nothing was accomplished until it suddenly occurred to me that an immediate opening of the skull down to the foramen would relieve the situation and as soon as the surgeon reached the point, the boy gasped and came back, having practically been dead for forty minutes. He lived after this for a month, then died the usual brain tumor death. At the autopsy it was found he had sixty tumors scattered over his brain, mostly on the outside, but the cerebellar tumor which was localized was found intact.

In another case a young man had hemianopsia with intense headaches and convulsions. The diagnosis symptoms were eye symptoms. A temporal decompression was done on both sides at two-week intervals and then the brain was exposed at the parieto-occipital region and a large tumor of seven ounces weight was removed. It was not encapsulated but was fixed to a deep surface of white substance by a peduncle. This man lived thirteen years. He was able to do little things about the farm and the house but was unequal to any mental tasks. He began to go down gradually mentally and physically with occasional convulsions and finally developed into a terminal dementia and died two years ago. This case was gratifying from some points of view, particularly the localization of tumor and its

removal, but the patient had a rather distressing life thereafter, unhappy, dull and stupid.

To the neurologist who likes to locate his pathology, brain tumors are a very attractive field, but usually he knows that he is working without any surety of his find. He may unexpectedly find a tumor, a cyst, or something of that order and feel extremely pleased with himself to think he was able to locate it and prove its location by operative procedure or postmortem examination. Although he accomplished something perhaps by decompression or spinal drainage, there are but few patients with brain tumor who make a full recovery. The percentage of failures and the percentage of deaths is very high, but the lure of the research man is still there.

The cases which Dr. Hammes has shown and described are cases which are almost impossible to diagnose except from careful observation and when we know the tumor is a glioma we never know how far the gliosis extends. It may occupy a small area; usually it occupies an area in the white substance which extends from one hemisphere to another and not infrequently invades the spinal cord and yet the diagnoses are few and unreliable. Consequently, gliomas are frequently overlooked because of disseminated hindrances. The occasional case then which comes up for diagnosis and research procedure is a very gratifying one, but on the whole the larger number of cases are either undiagnosed or impossible to remove.

Dr. Hammes: This man continued with a large practice until nine days before his death. He had no mental involvement whatsoever except that I thought he was a little bit sluggish and I also thought there was a little euphoria but his wife said that was perfectly natural.

(*b*) The second case was a patient who died from the inhalation of cayanide fumes, living six weeks after the exposure.

The clinical picture was one of confusion and delirium. The pathological picture was a diffuse encephalo-malacia.

This case will be reported in detail with complete microscopic findings at a later date.

Dr. E. L. Gardner (Minneapolis) reported the following case: This was a case of transposition of the viscera in a woman 40 years of age, who reported because of many indefinite symptoms. The physical examination and *x*-ray examination (demonstration of films) show a "mirror image" of the normal thoracic and abdominal organs.

X-ray reports show complete transposition in about 1 in 1,500 cases; autopsy reports average about 1 to 5,000 cases; and cadavers 1 to 10,000. The army reports showed incidence somewhere between the *x*-ray and autopsy records.

Complete transposition is more common than partial. It has been suggested that the cause may occur in the germ cell, but recent work at Johns Hopkins Medical School shows that the outer layer of the myocardium (which is first differentiated in the embryo) runs in a normal direction while the other is reversed. It had been suggested by earlier investigators that these cases of complete transposition might be related embryologically to the "identical twin," *i.e.*, one of the same appearance, the same sex, etc. There is some evidence favoring this thesis—in taking finger prints of identical twins they find that fingers of one hand are the exact image of the other.

There is another type of transposition, due to an anomaly of rotation, where the heart alone is partially transposed; the main part of the heart lies to the right of the midline, but the vessels are normal.

Complete transposition is interesting from the surgical standpoint. In the literature a large number of cases of complete transposition are reported where there is failure of the normal rotation of the colon, and the cecum has stopped high in the abdomen. Some cases are reported where the rotation only reaches the splenic flexure, and the appendix is on the right side, although the liver is on the left.

DISCUSSION

Dr. Wilcox (Minneapolis): What was the complaint that precipitated the examination?

Dr. Gardner: Tachycardia principally, and a lot of neurasthenic symptoms.

Dr. Ulrich: I have a patient 48 years old who has situs transversus. She has a diverticulum of the duodenum. She complains of vague abdominal symptoms. I don't know whether the diverticulum is the cause of the abdominal distress or not.

Dr. Archa Wilcox (Minneapolis) reported the following case:

Mrs. S., aged 65, injured in an automobile accident July 20, 1926. The injury consisted of a bilateral fracture of the inferior mandible; also incomplete fracture of the right femur with general lacerations. The fracture of the femur presented no complications as regards treatment and union was complete. The fracture of the inferior mandible, however, presented certain complications on account of the fact that the patient had a complete set of false teeth. There was present the usual senile changes and atrophy in the mandible, and there was considerable absorption of the alveolar processes of the upper jaw. The problem which presented itself was holding these fragments together with some type of internal fixation combined with external fixation. It was first thought an interior splint made from a mold of the dental plate would be practical, but before doing this the idea suggested itself that we use the false teeth plates for splints. The upper and lower plates were, therefore, wired together, taking out the two incisors from the upper and lower plates for an aperture through which the patient might be fed. With the assistance of a dentist the two united plates were placed in the patient's mouth and the lower jaw molded into the lower plate. This was accomplished without much difficulty and when the gums were in place the jaw was fixed by an elastic tape running over the occiput of the head, over the jaw and also transversely around the neck and across the front of the jaw. The patient was very comfortable and by using frequent mouth washes and taking liquid diet through the aperture made by removing the incisor teeth she was able to wear this apparatus and the plates without removal of same for a period of six weeks, at which time complete union had taken place

d an extremely satisfactory result obtained. Upon moval of the splint there was no actual ulceration of e mucosa and only slight erosion at one portion dictly in the mandible.

It will be necessary for this patient to have some rejustment regarding the fitting of the lower plate, but e result was so satisfactory it seemed wise to report is method of procedure in a case which at first apared to present a rather difficult problem.

Dr. Herbert Jones (Minneapolis) gave a further port and showed *x*-rays of the case of traumatic rupre of the diaphragm which he reported at the sepmber meeting.

Dr. H. L. Ulrich (Minneapolis) reported a case of poglycemia.

DISCUSSION

Dr. Gardner: I have never seen anything like it. he nearest approach to something of this type was in youngster 15 or 16 years of age who came in with ycosuria. On repeated blood sugar tests we found e blood sugar running much lower than normal. I llowed that case 2 or 3 years and the patient finally ed in diabetic coma. That was before the days of sulin. I believe Dr. Ulrich's case may develop diates.

The meeting adjourned.

Carl B. Drake, M.D.
Secretary.

TRUTH ABOUT MEDICINES

Bacillus Acidophilus Culture (B. A. Culture).—A pure ueous suspension of *Bacillus acidophilus*, marketed in als containing about 120 c.c. It contains not less an 100 million viable organisms *(B. acidophilus)* per c. at the time of sale. (For a discussion of the acons and uses of bacillus acidophilus preparations, see ew and Non-official Remedies, 1926, p. 211, "Lactic cid-Producing Organisms and Preparations"). B. B. ulture Laboratory, Inc., Yonkers, N. Y.

Psyllium Seed.—The seed of Plantago Psyllium and lated species of Plantago. By virtue of its indigestility and mucilaginous character, psyllium seed acts as mild laxative.

Psyllium Seed-Richards.—A brand of psyllium seed-N.R. Richards, Inc., Glenolden, Pa. (Jour. A. M. A., ov. 6, 1926, p. 1559).

Ovarian Residue Soluble Extract-P. D. & Co.—A soution of an extract of desiccated beef and hog ovaries, om which the corpora lutea have been removed, in hysiological solution of sodium chloride, each c.c. conining 0.04 gm. of soluble extract. The actions and ses of ovary preparations are discussed in New and on-official Remedies, 1926, p. 269. The product is arketed in 1 c.c. ampules. Parke, Davis & Co., Deoit.

Protein Extracts-Mulford.—For a discussion of the ctions and uses, see "Allergic Protein Preparations" New and Non-official Remedies, 1926, p. 36).

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

THE DIAGNOSIS AND TREATMENT OF TRAUMATIC RUPTURE OF THE KIDNEY WITH FREE HEMORRHAGE INTO THE PERITONEUM: Jean Quenu (Jour. de Chir. Paris, 1926, 28, 393-420). The majority of deaths from rupture of the kidney are the result of either failure or delay in making the diagnosis. The operation itself is not difficult. The diagnosis is made on:

First, the type of accident and the pathology previously present in the kidney. The injury may occur at any age and in either sex but the majority of patients are adult males. The site of the trauma is usually the left hypochondrium and may involve it laterally or anteroposteriorly. It is usually of considerable force although cases have been recorded in which the trauma was apparently insignificant. Fevers, especially malaria, render the kidney more susceptible to rupture because of increase in size and fragility. Second, the symptoms. Shock is present in many cases. Syncope may be instantaneous but is probably of more significance when delayed. If it appears after the lapse of several days it is significant of delayed hemorrhage. Syncope appearing several hours, or several days, after an abdominal injury, especially if that injury involved the left hypochrondrium, is almost pathognomonic of a ruptured kidney.

Pain may be absent but McCracken considers it to be one of the two most constant symptoms of ruptured kidney. It may be localized to the left hypochondrium, the flank, the costo-vertebral angle or it may be generalized. In a considerable number of cases it is referred to the left shoulder.

Localized tenderness and muscle spasm are almost constant findings and are of great value in making the diagnosis, but the absence of rigidity does not exclude a ruptured kidney. The pulse should be closely watched for increase in rate and decrease in volume. The ac-

celeration in the pulse rate, however, is not always commensurate with the amount of hemorrhage and the abdomen may be filled with blood and the pulse rate be 90 or less. Therefore, if acceleration of the pulse rate is to be considered an indication for surgery, absence of acceleration should not be considered a contraindication. Temperature changes are not of much significance. Vomiting is inconstant, being present in about 20 per cent of the cases. Retention of urine is occasionally present.

There are four groups of cases:

First, those with immediate profuse hemorrhage, rapidly fatal. There is a history of an abdominal contusion and the diagnosis of profuse internal hemorr is evident. These are desperate cases and demand immediate surgical intervention, the kidney being either torn from its pedicle or crushed.

Second, those with immediate abundant hemorrhage. The best surgical results are obtained in this group of cases. The general symptoms of hemorrhage are present but not immediately fatal and if the diagnosis cannot be made at once the patient may be kept under observation for a short time before surgical measures are undertaken.

Third, those with late abundant hemorrhage. These occur after several hours and have been observed as long as eleven days after the original injury. It is thought that in these cases the blood is first intracapsular but after a variable length of time the tension becomes sufficient to rupture the capsule and profuse hemorrhage occurs within the abdomen. A sudden movement or some trifling trauma may be associated with the onset of this accident, which is usually ushered in with severe pain, nausea and vomiting, and the signs of severe hemorrhage.

Fourth, the miscellaneous forms, including intermittent and insidious bleeding. The diagnosis can often be made clinically although some surgeons attach considerable significance to the blood findings. Curious errors in diagnosis are especially apt to occur in the cases with delayed hemorrhage in which the initial trauma has been overlooked or forgotten, and these have been diagnosed acute appendicitis, perforated gastric ulcer, pleurisy, etc.

Associated lesions include fractured ribs, hemothorax and ruptured spleen.

Treatment.—Emergency surgical intervention is indicated when the diagnosis is certain or probable, even in the absence of grave signs of hemorrhage. If the diagnosis is certain the exploration may be performed through an oblique incision, otherwise a median incision is to be preferred. Transfusion may be employed when indicated. Hemothorax may be drained by prolonging the incision upward and opening through an intercostal space. A splenectomy is the safest method of dealing with a ruptured spleen. Attempts at suturing or partial splenectomies are hazardous and packing is very difficult and often impossible. The effects of splenectomy have been questioned and progressive anemia and death occasionally reported but in most cases the results are good.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:
CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

SCARLET FEVER—A CLINICAL STUDY IN ITS PREVENTION AND SERUM TREATMENT: Erling S. Platou, M.D., and Loren Collins, M.D. (Archives of Pediatrics, November, 1926. *Toxin:* Small doses (3,000 skin test doses) of scarlet fever toxin (detoxified with sodium ricinoleate) did not protect eight nurses who were exposed to the disease from three to seven weeks after receiving the injection.

Among individuals that were kept Dick negative by inoculation or re-inoculation with the same preparation (Larson's toxin) in larger doses, no cases of scarlet fever have occurred in spite of intimate exposure.

Increasingly large initial doses of toxin may prevent the necessity of re-inoculation to maintain immunity.

The administration of a total of 9,000 skin test units of Larson's detoxified preparation has rendered a large percentage of children Dick negative for a period of 12 months. These cases to date have not been re-tested since the 12th month.

From an analysis of all the cases, the authors believe that the safest and most efficient method will be one in which increasingly large doses are given, beginning with perhaps 3,000 and advancing to as high as a total of 12,000 or more skin test doses by the third injection.

Antitoxin: The commercial preparations of scarlet fever antitoxin used in a comparative study of 190 cases were apparently specific.

Acceleration in clinical improvement, as gaged by temperature, rash and symptoms, was quite definite in 100 receiving antitoxin, particularly in those to whom antitoxin was administered early.

Better results might have been obtained if larger initial doses of antitoxin graded in units (according to blanching power per c.c.) could have been given.

When given early the serum has a beneficial effect on the toxemia and seems also to reduce the number of complications, although no effect on septic processes is noticeable.

The small prophylactic doses given to five cases in this group did not prevent later infection with scarlet fever.

Serum sickness in one-fourth of the cases was an annoying factor and in eleven cases it was extremely discomforting to the patient, especially in those who had previously been sensitized to horse serum through diphtheria immunization.

R. N. ANDREWS, M.D.

COURSE IN CHILD BEHAVIOR

A course in the behavior problems of children will be given in the old Library building, University of Minnesota, starting January 8, by Dr. Smiley Blanton in connection with the Minneapolis Child Guidance Clinic and in co-operation with the department of education, University of Minnesota.

CASE REPORTS

Members are requested to report interesting and ıusal cases for publication in this department. Many ıses reported at hospital staff meetings and similar ieetings are very instructive and worthy of publi-ıtion.

ONSTRUCTION OF VAGINA FROM LOOP OF SMALL BOWEL*

REPORT OF CASE

J. S. Holbrook, M.D.

Mankato, Minn.

The patient was a school teacher, aged 19, well deloped and normal in appearance, and having normal xual feelings. She had never menstruated and ught relief.

Physical examination showed a congenital absence the vagina. The external genitals were normal. here was a depression one-half inch deep, where the gina should have been. Patient wanted an operation, t was put off because we could feel no uterus, and lieved menstruation could not be established.

A few months later, she returned mentally depressed, d demanded an operation. Various methods were nsidered. It seemed certain that the skin graft and her methods, except use of a loop of small intestine, ould surely be a failure, because of cicatricial conaction. So a modification of the Baldwin method as done.

The abdomen was opened in the mid-line. Normal varies and tubes were present, but no uterus, except plum-shaped enlargement at the proximal end of each be. A fifteen inch loop of ileum near its terminal d was segregated, leaving its mesentery attached. n end-to-end anastomosis repairing the gap in the instinal tract was done. The ends of the loop were verted by a purse-string suture. Next, the bladder and ctum were separated from above, downward, toward e vulva. An assistant then pushed a long forceps from below, at site of the depression between the bia, and grasped a tape placed about at the center of e intestinal loop. This was now gently drawn down ntil it protruded. Next, the abdomen was closed. he protruding intestine was then attached to the skin pening, which had been stretched enough to allow ree fingers to enter. The loop of intestine was pened and now made a double vagina; eight inch ubber tubes were placed into these loops, so that they ight be easily irrigated. A week later the partition as destroyed by crushing.

The patient had trouble with the intestinal anastoosis for a few days, but within two weeks left the spital with a very normal appearing vagina.

Several months later a letter of appreciation indited that the patient's mental condition had returned normal. She was in a happy frame of mind and ell pleased.

*Presented before the annual meeting of the Southern Minesota Medical Association, held at Mankato, Oct. 18, 1926.

BOOK REVIEWS

History Taking and Recording. James A. Corscaden, M.D., Associate in Obstetrics and Gynecology, Columbia University, New York. 78 pages. New York: Paul B. Hoeber, 1926. Cloth, $1.50.

The Rockefeller Foundation. Annual Report, 1925. 521 pages. Illus. The Rockefeller Foundation, 61 Broadway, New York, 1926.

Shell Shock and its Aftermath. Norman Fenton, Ph.D., Associate Professor of Psychology, Ohio University; formerly at Base Hospital 117, A. E. F., and with the National Committee for Mental Hygiene. Introduction by Thomas W. Salmon, M.D., 173 pages. Illus. Cloth, $3.00. St. Louis: C. V. Mosby Company, 1926.

An Introduction to the Practice of Preventive Medicine. J. G. Fitzgerald, M.D., LL.D., F.R.S.C., Peter Gillespie, M.Sc., C.E., M.E.I.C., and H. M. Lancaster, B.A.Sc. 2nd edition. 792 pages. Illus. Cloth, $7.50. St. Louis; C. V. Mosby Company, 1926.

Physiology and Biochemistry in Mondern Medicine. J. J. R. MacLeod, M.B., LL.D. (Aberd.), D.Sc. (Tor.), F.R.S. and others. 5th edition. 1054 pages. Illus. Cloth, $11.00. St. Louis: C. V. Mosby Company, 1926.

Diseases of Women. Harry Sturgeon Crossen, M.D., F.A.C.S., 6th edition, revised and enlarged. 1005 pages. Illus. Cloth, $11.00. St. Louis: C. V. Mosby Company, 1926.

Report on Third International Congress of Military Medicine and Pharmacy, Paris, April 1925. Commander William Seaman Bainbridge, M. C., United States Naval Reserve Forces, Member of Permanent Committee, Delegate from the United States. 111 pages. Illus. Reprinted from the Military Surgeon, May to August 1926, inclusive. Washington, D. C., 1926.

TECHNIK DER MAGENCHIRURGIE, E. Bircher, Chief Surgeon of County Hospital of Aarau, Switzerland. Publisher: F. Enke, Stuttgart, Germany.

A book, based on a personal experience of some 1,500 stomach operations, amply and well illustrated by original drawings, and written with a great deal of individuality and knowledge. In its 114 pages it gives the surgeon's personal views, which are presented in a very readable way and will interest surgeons.

The gastric and duodenal ulcer is considered the result, in many cases, of an overactive influence of the pneumogastric and sympathetic nerves, causing hypersecretion, retarded emptying and pylorospasm. Thus Bircher resects the vagus near the cardia and at the lesser curvature, and also the sympathetic fibres at the pylorus. This procedure he not only adds to gastroenterostomy, where this method is chosen, but considers it indicated in the "neurotic" ulcer of the stomach, in gastric secretory and hyperperistaltic neuroses and gastric crises in tabes dorsalis. Even the surgeon who may not go this length in his work and who looks principally for extragastric causes in the hypertonic stomachs, will find these views, coming from

an experienced surgeon, good food for thought, and will now and then encounter a case where the knowledge of this procedure and its apparent results will be welcome. The infectious and embolic origin of ulcer is evidently not given the prominence in European publications which we here think it is entitled to since Rosenow's work.

The resection of the cardiac end of the stomach by freeing and pulling the esophagus down from the diaphragm, leaving a peritoneal sleeve attached to the *hiatus esophageus* for fixation over the new union between esophagus and the remnant of the resected stomach, gave Bircher five recoveries out of seven cases. The method is well illustrated.

The book has the refreshing flavor of individuality.

A. Schwyzer, M.D.

GENITO-URINARY DISEASES AND SYPHILIS, Henry H. Morton, M.D., F.A.C.S., 5th Edition, Revised and Enlarged. 712 pages, 328 illustrations and 38 colored plates. Cloth, $10.00. New York: Physicians and Surgeons Book Co., 1924.

This is the fifth edition of a book which first appeared in 1902. There are very few books which have been successfully revised more than twenty years after their first appearance, but careful reading of this volume gives one a very agreeable surprise. We were prepared to be disappointed, and our preliminary glance through the book found several parts which had not been brought thoroughly up to date. However, further reading showed those antiquated points to be relatively few and, for the most part, unimportant. The illustrations are numerous and satisfactory; many are photographs, some are drawings, and some are diagrams. The features of the work that lead to its great popularity have been well preserved and revised. Morton's volume will be a valued addition to the physician's library if he will weigh some of the statements carefully against those made in the most recent authoritative literature.

Chapters on radiography and pyelography, laboratory procedures in urology, treatment of congenital syphilis, treatment of syphilis in women, the Wassermann reaction and its clinical relations, and blood chemistry have been written for this edition by colleagues of the author at the Long Island College Hospital.

Theodore H. Sweetser, M.D.

LOCAL ANESTHESIA SIMPLIFIED, John Jacob Posner, D.D.S, New York. Chief of the Dental Department Harlem Dispensary. Fifty-five illustrations. St. Louis: The C. V. Mosby Company, 1924.

This book is well written, with concise, accurate descriptions, and excellent cuts.

Anyone whose work is in the region of the fifth cranial nerve, will appreciate this work of Posner's in Local Anesthesia Simplified.

E. E. MacGibbon, D.D.S.

WOMAN PHYSICIAN—General practice and health officer 18 years, laboratory technician one year, desires health or welfare work, assistantship or institutional position. Address C-104, care Minnesota Medicine.

FOR RENT—Space for Eye, Ear, Nose and Throat man. Referred cases from several physicians. Lowry Building, Saint Paul. Address C-105, care Minnesota Medicine.

EXPERIENCED LABORATORY TECHNICIAN desires position in Twin Cities or vicinity. Capable of doing blood counts, urinalysis, Wassermann, tissue staining, blood chemistry, and bacteriology; also *x*-ray. Address C-106, care Minnesota Medicine.

OFFICE SPACE FOR RENT in Donaldson Building, Minneapolis. Rate very reasonable. Call Geneva 2564 or address X, care Minnesota Medicine.

POSITION WANTED—Physician doing eye, ear, nose and throat work, wants part or possibly full time work in Twin Cities. Address C-102, care Minnesota Medicine.

WANTED—Salaried appointments for Class A physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

WANTED—Eye, ear, nose and throat man to become associated with a group of physicians. New clinical building. X-ray and clinical laboratories fully equipped. Will give free office expense until established. Address C-107, care Minnesota Medicine.

CONSTITUTION AND BY-LAWS OF THE MINNESOTA STATE MEDICAL ASSOCIATION*

Adopted in 1926 *And As Amended* To Date.

CONSTITUTION

ARTICLE I—NAME OF THE ASSOCIATON

The name and title of this organization shall be the Minnesota State Medical Association.

ARTICLE II—PURPOSES OF THE ASSOCIATION

The purposes of this Association shall be to federate nd bring into one compact organization the entire nedical profession of the State of Minnesota and to nite with similar societies of other states to form the American Medical Association; to extend medical nowledge and advance medical science; to elevate the tandard of medical education, and to secure the enact- ient and enforcement of just medical laws; TO PRO- MOTE PUBLIC HEALTH; to promote friendly inter- ourse among physicians; to guard and foster the iaterial interests of its members and to protect them gainst imposition; and to enlighten and direct public pinion in regard to the great problems of state medi- ine, so that the profession shall become more capable nd honorable within itself, and more useful to the ublic in the prevention and cure of disease and in rolonging and adding comfort to life.

ARTICLE III—COMPONENT SOCIETIES

Component societies shall consist of those county and istrict medical societies which hold charters from this ssociation.

ARTICLE IV—COMPOSITION OF THE ASSOCIATION

Section 1. This Association shall consist of Mem- ers, Delegates, EMERITUS MEMBERS, and Guests.

Sec. 2. Members. The Members of this Association iall be the members of the component county and istrict medical societies.

Sec. 3. Delegates. Delegates shall be those members ho are elected in accordance with this Constitution and y-Laws to represent their respective component so- eties in the House of Delegates of this Association.

Sec. 4. EMERITUS MEMBERS. EMERITUS IEMBERS SHALL BE THOSE MEMBERS OF OMPONENT, DISTRICT OR COUNTY MEDI- AL SOCIETIES, WHO HAVE HELD SUCH IEMBERSHIP FOR A PERIOD OF 25 YEARS, ND HAVE REACHED THE AGE OF 60 YEARS, R THROUGH PHYSICAL DISABILITY, ARE UN- BLE TO ENGAGE IN ACTIVE PRACTICE, AND /HO, UPON THEIR OWN REQUEST TO THEIR ISTRICT OR COUNTY SOCIETY, SHALL HAVE EEN DECLARED EMERITUS MEMBERS OF UCH DISTRICT OR COUNTY SOCIETIES.

Sec. 5. Guests. Any distinguished physician not a sident of this state who is a member of his own State ssociation may become a guest during an Annual Ses- on on invitation of the officers of this Association, id shall be accorded the privilege of participating in l of the scientific work for that Session.

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall be the legislative and isiness body of the Association, and shall consist of l) Delegates elected by the component county and district societies, (2) the Councilors, (3) THE PRESIDENT, (4) THE PRESIDENT ELECT, and (5) ex-officio the Secretary AND TREASURER of this Association.

ARTICLE VI—COUNCIL

The Council shall consist of the Councilors, the President, THE PRESIDENT ELECT, and exofficio the Secretary and Treasurer. Besides its duties mentioned in the By-Laws, it shall constitute the Finance Committee of the House of Delegates. A majority of Councilors shall constitute a quorum.

ARTICLE VII—SECTIONS AND DISTRICT SOCIETIES

The House of Delegates may provide for a division of the scientific work of the Association into appropriate Sections, and for the organization of such Councilors District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county and district societies.

DISTRICT COMPONENT SOCIETIES ARE HEREBY DEFINED AS AGGREGATIONS OF MEMBERS OF THIS ASSOCIATION LIVING IN SUCH SPARSELY SETTLED DISTRICTS AS TO MAKE THE ORGANIZATION OF INDIVIDUAL COUNTY MEDICAL SOCIETIES INADVISABLE.

ARTICLE VIII—SESSIONS AND MEETINGS

Section 1. This Association shall hold an Annual Session, during which there shall be held General Meetings, which shall be open to all registered members and guests.

Sec. 2. The general time and place for holding each Annual Session shall be fixed by the House of Delegates, PROVIDED THAT THE EXACT DATE OF THE MEETING MAY BE FIXED BY THE COMMITTEE ON SCIENTIFIC ASSEMLY.

ARTICLE IX—OFFICERS

Section 1. The officers of this Association shall be a President, PRESIDENT ELECT, 2 VICE PRESIDENTS, a Secretary, a Treasurer and a COUNCILOR FOR EACH COUNCILOR DISTRICT.

Sec 2. The officers, except the Councilors, shall be elected annually. The terms of the elected Councilors shall be for three years. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Association shall be elected by the House of Delegates at the second meeting of the House of Delegates at the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years.

ARTICLE X—FUNDS AND EXPENSES

Funds shall be raised by an equal per capita assessment of members. The amount of the assessment shall be fixed by the House of Delegates, but shall not exceed

*All new material is in capitals.

the sum of FIFTEEN DOLLARS ($15.00) per capita per annum except on a two-thirds vote of the Delegates present. Funds may also be raised from the Association's publications, by voluntary contributions, and in other manner approved by the House of Delegates. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for publications, and for such other purposes as will promote the welfare of the profession. All resolutions appropriating funds must be referred to the Finance Committee before action is taken thereon.

ARTICLE XI—REFERENDUM

Section 1. A General Meeting of the Association may, be a two-thirds vote of the members present, order a general referendum on any question pending before the House of Delegates, and when so ordered, the House of Delegates shall submit such question to the members of the Association, who may by mail or in person, and, if the members voting shall comprise a majority of all the members of the Association, a majority of such a vote shall determine the question and be binding on the House of Delegates.

Sec. 2. The House of Delegates may, by a two-thirds vote of its own members, submit any question before it to a general referendum, as provided in the preceding section, and the result shall be binding on the House of Delegates.

ARTICLE XII—THE SEAL

The Association shall have a common Seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII—AMENDMENTS

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates present at any Annual Session, provided that such amendment shall have been presented in open meeting at a previous session, and that it shall have been published twice during the year in the bulletin or journal of this Association, and sent officially to each component society at least two months before the meeting at which final action is to be taken.

BY-LAWS

CHAPTER I—MEMBERSHIP

Section 1. The name of a physician on the properly certified roster of members of a component society, which has paid its annual assessment, shall be prima facie evidence of membership in this Association.

Sec. 2. Any person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall not be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings until he has been relieved of such disability.

Sec. 3. EMERITUS AND VISITING MEMBERS OF COMPONENT DISTRICT OR COUNTY MEDICAL SOCIETIES SHALL HAVE ALL THE RIGHTS AND PRIVILEGES OF MEMBERS EXCEPT THOSE OF VOTING AND HOLDING OFFICE. THEY SHALL BE EXEMPT FROM ALL DUES AND ASSESSMENTS, EXCEPT THAT THEY SHALL NOT BE ENTITLED TO COPIES OF MINNESOTA MEDICINE WITHOUT SUBSCRIPTION.

Sec. 4. Each member in attendance at the Annual Session shall have his name entered on the registration records indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge, which shall be evidence of his right to all the privileges of membership at that Session. No member shall take part in any of the proceedings of an Annual Session until he has complied with the provisions of the section.

CHAPTER II—TERMS OF OFFICE

TERMS OF OFFICE OF THE OFFICERS AND COMMITTEE MEN UNLESS OTHERWISE PROVIDED SHALL BE FOR A TERM OF ONE YEAR FROM JANUARY 1ST FOLLOWING DATE OF THEIR ELECTION.

CHAPTER III—ANNUAL AND SPECIAL SESSIONS OF THE ASSOCIATION

Section 1. The Association shall hold an Annual Session at such time and place as has been fixed at the preceding Annual Session by the House of Delegates, AND THE COMMITTEE ON SCIENTIFIC ASSEMBLY.

Sec. 2. Special meetings of either the Association or of the House of Delegates shall be called by the President on petition of twenty delegates OR fifty members.

CHAPTER IV—GENERAL MEETINGS

Section 1. All registered members may attend and participate in the proceedings and discussions of the General Meetings and of the Sections. The General Meetings shall be presided over by the President or by one of the Vice-Presidents, and before them shall be delivered the address of the President.

Sec. 2. The General Meeting may recommend to the House of Delegates the appointment of committees or commissions for investigation of special interest and importance to the profession and the public.

CHAPTER V—HOUSE OF DELEGATES

Section 1. The House of Delegates shall meet at 2 p. m. on the FIRST day of the Annual Session. It may adjourn from time to time as may be necessary to complete its business, provided, that its hours shall conflict as little as possible with the General Meetings. The order of business shall be arranged as a separate section of the program.

Sec. 2. Each component society shall be entitled to send to the House of Delegates each year one delegate for every fifty members, and one for each fraction thereof, but each component society which has made its annual report and paid its assessments as provided in this Constitution and By-Laws, shall be entitled to one delegate.

Sec. 3. Twenty delegates shall constitute a quorum.

Sec. 4. It shall, through its officers, Council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each Annual Session a stepping-stone to future ones of higher interest.

Sec. 5. THE CHAIRMEN OF THE VARIOUS APPOINTED COMMITTEES AND THE DELE-

GATES TO THE AMERICAN MEDICAL ASSOCIATION MAY ATTEND THE REGULAR MEETINGS OF THE HOUSE OF DELEGATES BUT WITHOUT THE RIGHT TO VOTE. THE CHAIRMEN OF THE VARIOUS COMMITTEES MAY PARTICIPATE IN DEBATE ON THEIR OWN REPORTS.

Sec. 6. It shall consider and advise as to the material interest of the profession, and of the public in those important matters wherein it is dependent upon the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

Sec. 7. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse among physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

Sec. 8. It shall encourage post-graduate and research work, as well as home study, and shall endeavor to have the results utilized and intelligently discussed in the county AND DISTRICT societies.

Sec. 9. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, AND AS IS HEREINAFTER PROVIDED.

Sec. 10. It shall, upon application, provide and issue charters to county OR DISTRICT societies organized to conform to this Constitution and By-Laws.

Sec. 11. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies to be designated by hyphenating the names of two or more counties so as to distinguish them from district and other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 12. It shall divide the State into Councilor Districts, specifying what counties each district shall include, and, when the best interest of the Association and profession will be promoted thereby, organize in each a district medical society, and all members of component county societies, and no others, shall be members in such district societies.

Sec. 13. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates, and may be present and participate in the debate on their reports.

Sec. 14. It shall approve all memorials and resolutions issued in the name of the Association before the same shall become effective.

Sec. 15. A MEMBER OF THE STATE ASSOCIATION MUST BE A MEMBER OF SOME COMPONENT COUNTY OR DISTRICT SOCIETY AND CONVERSELY A MEMBER OF A COUNTY OR DISTRICT SOCIETY MUST BE A MEMBER OF THE STATE ASSOCIATION. AN ACTION OF THE HOUSE OF DELEGATES OR OF THE COUNCIL SHALL BE BINDING UPON ITS MEMBERS UNLESS OTHERWISE PROVIDED.

CHAPTER VI—ELECTION OF OFFICERS

Section 1. THE MANNER OF ELECTIONS SHALL BE DETERMINED BY THE ASSEMBLED HOUSE OF DELEGATES, and a majority of the votes cast shall be necessary to elect.

Sec. 2. The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes AT THE SECOND MEETING OF THE HOUSE OF DELEGATES.

Sec. 3. Any person known to have solicited votes for or sought any office within the gift of this Assotiation shall be ineligible for any office for two years.

CHAPTER VII—DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates. HE shall appoint all committees not otherwise provided for. HE shall deliver an annual address and perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit by appointment the various sections of the State and assist the Councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. THE VICE PRESIDENTS SHALL ASSIST THE PRESIDENT IN THE DISCHARGE OF HIS DUTIES. IN THE EVENT OF THE PRESIDENT'S DEATH, RESIGNATION OR REMOVAL FROM THE STATE OR INABILITY TO FUNCTION, THE FIRST VICE PRESIDENT SHALL AUTOMATICALLY FUNCTION AS PRESIDENT.

Sec. 3. The Treasurer shall give bond in such sum as the Council may require. The Council shall execute said bond with some indemnity company at the expense of the Association. He shall demand and receive all funds due the Association together with the bequests and donations. He shall pay money out of the treasury only on a written order of the CHAIRMAN OF THE COUNCIL, countersigned by the Secretary OF THE ASSOCIATION; HE SHALL subject his accounts to such examinations as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands. The amount of his salary shall be fixed by the Council. THE COUNCIL MAY AT ITS DISCRETION ALLOW THE SECRETARY A REVOLVING FUND OF SUCH MONEYS AS IT DEEMS ADVISABLE. THIS MONEY MAY BE EXPENDED BY THE SECRETARY FOR SUCH ADMINISTRATIVE PURPOSES AS HE DEEMS NECESSARY.

Sec. 4. The Secretary shall attend the General Meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be

ex-officio Secretary of the Council. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer, all funds of the Association which come into his hands. He shall provide for the registration of the members and delegates at the Annual Sessions. He shall, with the coöperation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county OR DISTRICT society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county OR DISTRICT societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall employ such assistants as may be ordered by the COUNCIL, and shall make an annual report to the House of Delegates. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessment, collect the same, and at once turn it over to the Treasurer. Acting with the Committee on Scientific ASSEMBLY, he shall prepare and issue all Programs. The amount of his salary shall be fixed by Council. The Secretary shall present to the Association on the last day of the General Session, a summary of the proceedings of the Council and the House of Delegates.

CHAPTER VIII—COUNCIL

Section 1. THE COUNCIL SHALL HAVE FULL AUTHORITY AND POWER OF THE HOUSE OF DELEGATES BETWEEN ANNUAL SESSIONS, UNLESS THE HOUSE OF DELEGATES SHALL BE CALLED INTO SESSION AS PROVIDED IN THE CONSTITUTION AND BY-LAWS. IT SHALL CONSIST OF THE COUNCILORS AND THE PRESIDENT, AND THE PRESIDENT-ELECT AND EX-OFFICIO THE SECRETARY AND THE TREASURER OF THIS ASSOCIATION. A MAJORITY OF ITS MEMBERS SHALL CONSTITUTE A QUORUM.

Sec. 2. The Council shall meet on the FIRST day of the Annual Session and daily during the Session and at such other times as necessity may require, subject to the call of the chairman, or on petition of three Councilors. It shall meet on the last day of the Annual Session of the Association to organize and outline work for the ensuing year. It shall elect a chairman and a clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

Sec. 3. Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit the counties in his district when necessary for the purpose of organizing component societies where none exist; for inquiring into the conditions of the profession, and for improving and increasing the zeal of the county societies and their members. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the FINANCE COMMITTEE OF THE COUNCIL on a proper itemized statement, and each Councilor MAY receive as compensation a per diem of $10.00 while engaged in making his official visits to the counties in his district, OR IN ATTENDANCE AT DULY AUTHORIZED SPECIAL MEETINGS OF THE COUNCIL, but this shall not be construed to include his expense in attending the Annual Session of the Association.

Sec. 4. The Council shall be the board of censors of the Association. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or this Association. All questions of an ethical nature brought before the House of Delegates or the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters be final.

Sec. 5. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Sec. 6. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association, and shall have authority to appoint an editor and such assistants as it deems necessary, FOR PUBLICATIONS OTHER THAN MINNESOTA MEDICINE. IT SHALL DETERMINE THE SALARIES OF ALL EMPLOYES OF THIS ASSOCIATION. All money received by the Council and its agents, resulting from the discharge of the duties assigned to them, must be paid to the Treasurer of the Association. As the Finance Committee it shall annually SUPERVISE THE AUDITING OF the accounts of the Treasurer and Secretary and other agents of this Association and present a statement of the same in its annual report to the House of Delegates, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary. In the event of a vacancy in the office of the Secretary or the Treasurer, the Council shall fill the vacancy until the next annual election.

Sec. 7. IT MAY—AT ITS DISCRETION—EMPLOY EXPERT ASSISTANCE IN AUDITING THE VARIOUS RECORDS OF THE OFFICERS AND COMMITTEES OF THE ASSOCIATION.

Sec. 8. IT MAY—AT ITS DISCRETION—EMPLOY SUCH HELP AS IT MAY DEEM NECESSARY TO FACILITATE THE WORK OF THE ASSOCIATION.

Sec. 9. THE COUNCIL MAY AT ITS DISCRETION SPEND FOR THE PURPOSES FOR WHICH IT WAS CREATED, SUCH MONEYS AS ARE IN THE EDUCATIONAL FUND.

Sec. 10. THE COUNCIL SHALL FILL ANY VACANCY NOT OTHERWISE PROVIDED FOR WHICH MAY OCCUR DURING THE INTERVAL BETWEEN ANNUAL MEETINGS OF THE HOUSE OF DELEGATES; THE APPOINTEE SHALL SERVE UNTIL HIS SUCCESSOR HAS BEEN ELECTED AND HAS QUALIFIED.

Sec. 11. THE COUNCIL SHALL NOMINATE AND PRESENT TO THE HOUSE OF DELEGATES A LIST OF NOMINATIONS FOR DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION TO BE VOTED UPON BY THE HOUSE OF DELEGATES. ADDITIONAL NOMINATIONS MAY BE MADE FROM THE FLOOR OF THE HOUSE OF DELEGATES.

CHAPTER IX—COMMITTEES

Section 1. The standing committees shall be as follows and appointed by the President unless otherwise provided.

A Committee on Scientific ASSEMBLY.

A Committee on Public Policy and Legislation.

A Committee on Necrology.

AN EDITING AND PUBLISHING COMMITTEE.

A COMMITTEE ON PUBLIC HEALTH EDUCATION.

A COMMITTEE ON RADIO BROADCASTING.

A Committee on Hospitals and Medical Education.

A Committee on Arrangements, and such other committees as may be necessary.

COMMITTEE ON SCIENTIFIC ASSEMBLY:—

IN ORDER TO FACILITATE THE WORK OF THE ASSOCIATION, ITS SCIENTIFIC WORK SHALL BE GROUPED UNDER TWO SECTIONS, TO BE DESIGNATED, 1ST SECTION OR MEDICINE, AND 2ND SECTION, SURGERY, UNDER WHICH SHALL BE GROUPED THE APPROPRIATE SUBDIVISIONS REPRESENTED BY THE SPECIAL BRANCHES OF MEDICINE AND SURGERY RESPECTIVELY. THE PRESIDENT SHALL APPOINT FOR EACH ANNUAL MEETING A CHAIRMAN AND SECRETARY FOR EACH SECTION. THE MEMBERSHIP OF THE COMMITTEE ON SCIENTIFIC ASSEMBLY SHALL CONSIST OF THE CHAIRMAN AND SECRETARY OF THE SECTIONS OF MEDICINE AND SURGERY, THE PRESIDENT, FIRST VICE-PRESIDENT, THE PRESIDENT-ELECT AND THE SECRETARY OF THE ASSOCIATION. THE PRESIDENT AND FIRST VICE-PRESIDENT SHALL ACT AS CHAIRMAN AND VICE-CHAIRMAN RESPECTIVELY. IT SHALL BE THE DUTY OF THE COMMITTEE TO ARRANGE FOR AN ATTRACTIVE AND INSTRUCTIVE SCIENTIFIC PROGRAM AT THE VARIOUS SESSIONS OF THE ENSUING MEETING OF THE ASSOCIATION. IT SHALL BE THE DUTY OF THE SECTION CHAIRMAN TO PRESIDE OVER THE MEETINGS OF THE RESPECTIVE SECTIONS WHEN MEETING SEPARATELY AND ALTERNATELY WHEN THE PROGRAMS OF THE SECTIONS ARE COMBINED. THEY SHALL, FURTHERMORE, COOPERATE WITH THE RESPECTIVE SECTION SECRETARIES IN THE ARRANGEMENT OF THIS PROGRAM. THIS COMMITTEE SHALL COLLABORATE WITH THE COMMITTEE ON ARRANGEMENTS TO THE BEST INTERESTS OF THE ANNUAL MEETING.

Sec. 3. The Committee on Public Policy and Legislation shall consist of *5* members and the President and Secretary. Under the direction of the House of Delegates, it shall represent the Association in securing and enforcing legislation in the interest of public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state and national affairs and elections.

Sec. 4. THE EDITING AND PUBLISHING COMMITTEE SHALL CONSIST OF 5 MEMBERS—APPOINTED SERIALLY BY THE PRESIDENT, 2 SHALL BE MEMBERS OF THE HENNEPIN COUNTY MEDICAL SOCIETY, 2 SHALL BE MEMBERS OF THE RAMSEY COUNTY MEDICAL SOCIETY, AND ONE SHALL BE A MEMBER OF SOME OTHER COUNTY MEDICAL SOCIETY,—EACH SHALL HOLD OFFICE FOR A PERIOD OF 5 YEARS. THE EDITING AND PUBLISHING COMMITTEE SHALL HAVE FULL RESPONSIBILITY AND CONTROL OF THE EDITING AND PUBLISHING OF MINNESOTA MEDICINE AND THE APPOINTMENT OF ITS EDITOR AND BUSINESS MANAGER AND SHALL DETERMINE THEIR COMPENSATION SUBJECT TO APPROVAL BY THE COUNCIL. THEY SHALL MAKE AN ANNUAL REPORT TO THE HOUSE OF DELEGATES.

THE STATE ASSOCIATION SHALL PAY THE EDITING AND PUBLISHING COMMITTEE THE SUM OF TWO DOLLARS PER YEAR PER MEMBER IN CONSIDERATION FOR WHICH EACH MEMBER OF THE ASSOCIATION SHALL RECEIVE A COPY OF THE JOURNAL FOR ONE YEAR.

AN ASSOCIATE EDITOR SHALL BE APPOINTED FOR EACH COUNCILOR DISTRICT, BY THE EDITING AND PUBLISHING COMMITTEE.

THE PROFITS DERIVED FROM THE PUBLICATION OF THE JOURNAL SHALL BE PAID INTO THE TREASURY OF THE STATE MEDICAL ASSOCIATION AND ANY DEFICIT ARISING FROM THE PUBLICATION OF THIS JOURNAL BE PAID FROM THE TREASURY OF THE ASSOCIATION.

Sec. 5. THE COMMITTEE ON PUBLIC HEALTH EDUCATION SHALL CONSIST OF 5 MEMBERS OR AS MANY MORE AS THE COUNCIL MAY DETERMINE. ITS FUNCTION SHALL

BE, FIRST, TO STRIVE TO DEVELOP AN INTELLIGENT PUBLIC VIEWPOINT TOWARD THE MEDICAL PROFESSION; SECOND, TO COOPERATE WITH THE VARIOUS AGENCIES THROUGHOUT THE STATE WHOSE FUNCTION IS THE PROMOTION OF PUBLIC HEALTH, AND WHOSE GOVERNING BODIES ARE COMPOSED IN WHOLE OR IN PART OF LAYMEN, SO THAT FROM A MEDICAL STANDPOINT THESE AGENCIES SHALL BE INTELLIGENTLY ADMINISTERED; THIRD, TO USE SUCH MEASURES THROUGHOUT THE STATE AS MAY BE NECESSARY TO ELIMINATE FRAUDULENT MEDICAL ADVERTISEMENTS FROM THE PUBLIC PRESS; FOURTH, TO AID AND ENCOURAGE EACH COMPONENT SOCIETY TO CONDUCT AT LEAST ONE ANNUAL PUBLIC MEDICAL MEETING; FIFTH, TO ENCOURAGE PUBLIC HEALTH EDUCATIONAL MATTERS THROUGH THE CHANNELS OF THE PUBLIC PRESS—RADIO—MOVIES AND THE LECTURE PLATFORM.

Sec. 6. THE RADIO BROADCASTING COMMITTEE SHALL CONSIST OF 5 MEMBERS. ITS FUNCTION SHALL BE TO SECURE PAPERS SUITABLE FOR RADIO BROADCASTING AND TO SECURE AS WIDE NEWSPAPER PUBLICITY FOR THESE PAPERS THROUGHOUT THE STATES AS MAY BE PRACTICABLE. THE NAMES OF THE WRITERS OF SUCH PAPERS SHALL NOT BE ANNOUNCED OVER THE RADIO OR IN THE PAPERS OR MAGAZINES IN WHICH THEY ARE PUBLISHED. THEY SHALL BE ANNOUNCED AND PUBLISHED AS BEING UNDER THE AUSPICES OF THE MINNESOTA STATE MEDICAL ASSOCIATION AND THE COUNTY SOCIETY OF WHICH THE WRITER IS A MEMBER TOGETHER WITH THE NAME OF THE CITY IN WHICH THE WRITER RESIDES.

Sec. 7. THE COMMITTEE ON HOSPITALS AND MEDICAL EDUCATION SHALL CONSIST OF FIVE MEMBERS. ITS FUNCTION SHALL BE:—

1. TO GIVE INFORMATION AND RECOMMENDATIONS, IF INDICATED, TO THE ASSOCIATION IN MATTERS PERTAINING TO MEDICAL EDUCATION IN THE STATE.

2. TO ENCOURAGE AND DEVELOP A COMPREHENSIVE PROGRAM FOR POST-GRADUATE INSTRUCTION, AND IN COOPERATION WITH THE FACULTY OF THE UNIVERSITY TO ARRANGE FOR SUCH COURSES TO BE GIVEN AT A MINIMUM OF EXPENSE AND LOSS OF TIME.

3. TO MAINTAIN JURISDICTION OVER THE STANDARDIZATION OF HOSPITALS WITHIN THE STATE AND IN COOPERATION WITH NATIONAL SOCIETIES WHO MAINTAIN BUREAUS OF STANDARDIZATION TO SEE THAT SUCH STANDARDS ARE MAINTAINED.

4. THE CHAIRMAN OF THIS COMMITTEE SHALL BE A REPRESENTATIVE OF THIS ASSOCIATION AT THE ANNUAL CONGRESS OF MEDICAL EDUCATION AND MEDICAL LICENSURE, PUBLIC HEALTH AND HOSPITALS OF THE NATIONAL COMMITTEE.

Sec. 8. The Committee on Arrangements shall be appointed by the component society of the county in which the Annual Session is to be held. It shall provide suitable accommodations for the meeting places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary for publication in the program, and shall make additional announcements during the session as occasion may require. THE COMMITTEE ON ARRANGEMENTS SHALL COOPERATE WITH THE COMMITTEE ON SCIENTIFIC ASSEMBLY IN THE WORK OF SECURING AN ATTRACTIVE AND SUCCESSFUL PROGRAM FOR THE ANNUAL GENERAL SESSIONS OF THE ASSOCIATION.

CHAPTER X—COUNTY AND DISTRICT SOCIETIES

Section 1. All county AND DISTRICT societies now in affiliation with the Association or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, on application, receive a charter from and become a component part of this Association.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the Council or the House of Delegates and shall be signed by the President and Secretary of this Association. The Council or the House of Delegates shall have the authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made, with the aid of the Councilor for the District, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county and district society shall judge of the qualifications of its own members, but, as such societies are the only portals of this Association and to the American Medical Association, every reputable and legally registered physician who does not practice or claim to practice, nor lend his support to any exclusive system of medicine, shall be entitled to membership; provided, however, that certain physicians who occupy teaching or research positions in recognized medical schools and who do not wish to be licensed to practice medicine, may acquire honorary membership in the State and component societies. Before a charter is issued to any county or district society, full and ample notice and opportunity shall be given to

every such physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county or district in refusing him membership, or in suspending or expelling him, shall have the right to appeal to the Council, and its decision shall be final.

Sec. 7. In hearing appeals the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a Board and as individual Councilors, in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 8. A physician living on or near a county line may hold his membership in that county society most convenient for him to attend, on permission of the society under whose jurisdiction he resides.

Sec. 9. Each component society shall have general direction of the affairs of the profession in its county or district, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county or district; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county or district.

Sec. 10. At some meeting in advance of the Annual Session of this Association, each county or district society shall elect a delegate or delegates and an alternate or alternates to represent it in the House of Delegates of this Association, in the proportion of one delegate to each fifty members or fraction thereof, and the Secretary of the society shall send a list of such delegates to the Secretary of the Association 2 MONTHS BEFORE THE DATE FIXED FOR THE ANNUAL MEETING.

Sec. 11. The Secretary of each component society shall keep a roster of its members and of the non-affiliated registered physicians of the county or district, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In keeping such roster the Secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county or district, and in making his annual report he shall be certain to account for every physician who has lived in the county or district during the year.

Sec. 12. The Secretary of each component society shall forward the assessment of its members together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county or district to the Secretary of this Association each year before December 31st.

Sec. 13. Each county or district society which fails to pay its assessment or make the report required, on or before December 31st, shall be held as suspended and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association or of the House of Delegates until such requirements have been met.

Sec. 14. The ANNUAL per capita dues TO THE ASSOCIATION OF the members of the component societies shall be DETERMINED BY THE HOUSE OF DELEGATES AND shall be paid and forwarded as hereinbefore provided, BEING PAYABLE ON OR BEFORE JANUARY 1ST OF THE YEAR FOR WHICH THEY ARE LEVIED.

CHAPTER XI—MISCELLANEOUS

Section 1. THE TIME REQUIRED FOR DELIVERY OF ANY PAPER OR ADDRESS BEFORE THE ASSOCIATION SHALL BE LEFT TO THE DISCRETION OF THE PROGRAM COMMITTEE.

Sec. 2. All papers read before the Association or any of the Societies shall become its property. Each paper shall be deposited with the Secretary when read.

Sec. 3. The deliberations of this Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this Constitution and By-Laws.

Sec. 4. The Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XII—AMENDMENTS

These By-Laws may be amended at any annual Session by a majority vote of all the delegates present at that session, after the amendment has lain on the table for one day. UPON THE ADOPTION OF THIS CONSTITUTION AND THESE BY-LAWS ALL PREVIOUS CONSTITUTIONS AND BY-LAWS ARE THEREBY REPEALED.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

PHYSICIANS LICENSED AT THE OCTOBER, 1926, EXAMINATION TO PRACTICE IN MINNESOTA

BY EXAMINATION

NAME	MEDICAL COLLEGE	ADDRESS
Benepe, James Lorimer	Wash. Univ. Mo. M.D. 1926	Ancker Hospital, St. Paul
Borgerson, Arthur Henry	N. W. Cert. Med. 1926	Ancker Hospital, St. Paul
Cronwell, Bernhard Johannes, Jr.	U. of Ill. Cert. Med. 1926	Ancker Hospital, St. Paul
Fellows, Manley Fording	U. of Ill. Cert. Med. 1926	Ancker Hospital, St. Paul
Hanlon, Frank Robert	Jefferson, M.D. 1925	Mayo Clinic, Rochester
Hart, Alfred Benjamin, Jr.	St. Louis Univ. M.D. 1925	Owatonna, Minn.
Jordan, Ferdinand Michael	U. of Pa. M.D. 1925	1150 1st St., Rochester, Minn.
Larson, Arthur J.	N. W. Cert. Med. 1926	Ancker Hospital, St. Paul
Leddy, Eugene Thomas	Harvard, M.D. 1919	Mayo Clinic, Rochester
Lee, Seymour Rowland	U. of Ill. Cert. Med. 1926	Ancker Hospital, St. Paul
Leighton, Frederick	U. of Minn. M.B. 1926	Oak Terrace, Minn.
Mooney, Leo Patrick	U. of Minn. M.B. 1926	St. Mary's Hospital, Minneapolis
Nelson, Edmond Newell	U. of Minn. M.B. 1926	81 Arthur Ave. S. E., Minneapolis
Nunn, Leslie Laughlin	Jefferson, M.D. 1925	Mayo Clinic, Rochester
Reichelderfer, Chas. Franklin	N. W. Cert. Med. 1926	Ancker Hospital, St. Paul
Rock, Robert Edwin	U. of Minn. M.B. 1926	N. P. Hospital, St. Paul
Wright, Patrick Edgar	Loyola M.D. 1926	1573 University Ave., St. Paul

BY RECIPROCITY

Bayha, Carl Homer	Ohio State U. M.D. 1925	Rochester, Minn.
Baxter, Geoffrey Haslam	U. of Cal. M.D. 1924	Mayo Clinic, Rochester
Caron, Robert Paul	U. of Ill. M.D. 1925	P. & S. Bldg., Minneapolis
Corbeille, Catherine	Detroit Col. Med. & Surg. M.D. 1926	Mayo Clinic, Rochester
Davis, John Dwight	U. of Ill. M.D. 1922	Mayo Clinic, Rochester
Fredericks, Geo. Matthew	U. of Neb. M.D. 1926	St. Mary's Hospital, Minneapolis
Gleason, Notery Arthur	Detroit Col. Med. & Surg. M.D. 1926	Mayo Clinic, Rochester
Graham, Andrew Stephens	U. of Va. M.D. 1925	Mayo Clinic, Rochester
Haldeman, Keene Oliver	U. of Cal. M.D. 1925	Mayo Clinic, Rochester
Holm, Clarence Enfrid	U. of Ia. M.D. 1925	Isle, Minnesota
Kilbride, Edwin A.	Creighton, M.D. 1925	Canby, Minnesota
Korth, Zeno Nicholas	Creighton, M.D. 1925	Mayo Clinic, Rochester
Magiera, Estelle Antoinette	Creighton, M.D.1925	724 Main St. N. E., Minneapolis
Martin, Webster Churchill	U. of Mich. M.D.1925	Fidelity Bldg., Duluth
Miles, Lee Monroe	Rush, M.D.1915	Hamm Bldg., St. Paul
Mills, Ralph Garfield	N. W. M.D. 1907	Mayo Clinic, Rochester
Reid, Winfred Lee	N. W. M.D. 1924	Mayo Clinic, Rochester
Rubenstein, Myer W.	Jefferson, M.D. 1923	Mayo Clinic, Rochester
Sheedy, Chester	Marquette, M.D. 1926	Austin, Minnesota
Squire, Fay Huffman	U. of Iowa, M.D. 1925	Mayo Clinic, Rochester
White, Robert B.	Vanderbilt, M.D. 1920	Mayo Clinic, Rochester
White, Wm. Henry Clay	U. of Va. M.D. 1922	Ely, Minnesota

NATIONAL BOARD

Kestel, John L.	Creighton, M.D. 1924	Rochester, Minnesota

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association and Minneapolis Surgical Society.

Vol. X FEBRUARY, 1927 No. 2

CHRONIC PANCREATITIS*

JOHN B. DEAVER, M.D.
Philadelphia

It is a well-established clinical fact that enlargement of the pancreas, especially the head of the gland, is a frequent accompaniment of cholecystitis. The frequency of this condition has been variously estimated and in a manner is dependent upon the personal factor, as expressed by the experience of the surgeon. Of course, it presupposes a knowledge of the size and palpatory characteristics of the normal gland, a knowledge gained by the habit of thorough abdominal exploration whenever the opportunity arises. The first lesson in surgical pathology and in the pathology of the living is the recognition of normal tissue. We believe it safe to say that careful and painstaking examination at operation for cholecystitis and common duct stone, by proper exposure with gentle but thorough palpation and inspection with the aid of the Cameron light, will reveal a surprisingly large incidence of pancreatitis and also the early stages of this condition presented in the regional lymphatics.

The first procedure in the examination is directed to the peri-ductal glands in relation with the cystic and common ducts. When only these glands are enlarged, the infectious inflammation is circumscribed and the prognosis against subsequent post-operative sequelæ is practically assured. In these circumstances simple removal of the infected gallbladder should suffice to accomplish a permanent cure. When the glands in the gastro-hepatic omentum adjacent to, and around the head of the pancreas are enlarged, the outlook is less promising, especially if they are resistant to the touch, thus indicating fibrotic change; while if the glands are still soft and impressionable to the touch, the curative effect of bile drainage is quite promising. I cannot stress the practical importance of these facts too strongly upon my medical friends who do not have the same opportunity of adjudging the condition as does the surgeon. Daily contact with these conditions at the operating table verifies the oft-quoted statement that the surgeon walks by

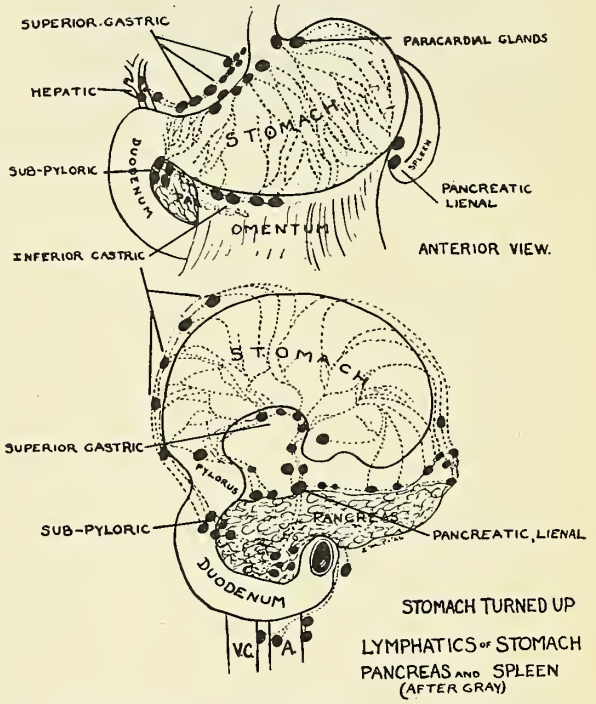

Fig. 1. Distribution of lymphatics in region of stomach and pancreas.

sight and touch and not by faith alone. When the process has advanced to the cirrhotic stage the damage is irreparable and the opportunity for the benefits of early operation is past. The responsibility for this state of affairs lies with those who have faith in medical measures, such as non-surgical biliary drainage, which not only fail to cure, but invite the hazards of serious complications. When the surgeon fails in the attempt miraculously to correct the faults of delay, the art of surgery is unjustly held accountable for the mistakes of an allied art.

There is lack of unanimity of opinion regarding the etiology of chronic pancreatitis. We

*Read before the Minneapolis Surgical Society, Minneapolis, December 2, 1926.

have persistently advocated our belief that the process begins as a lymphangitis from a focus of infection usually in the liver or the gall-bladder or both. There is a successive involvement of the lymph glands about the cystic and common ducts, the glands in the gastro-hepatic omentum, when there are stones in the duct. The common duct is always more or less completely surrounded by the pancreas so that infection in the duct wall may easily extend to the pancreas itself. We have noted in several instances of stone in the lower end of the common duct without jaundice that there was a mild subacute pancreatitis and evidence of fat necrosis. It may well be that in cases of acute pancreatitis presumably the result of the entrance of bile into the duct of Wirsung, made possible by a conveniently and nicely lodged stone, a factor more important than bile, may have been the extension of infection from the wall of the duct about the stone directly to the substance of the pancreas itself.

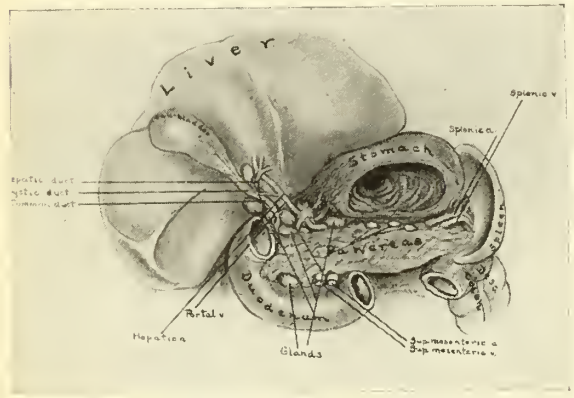

Fig. 2. Enlarged lymph nodes in region of pancreas.

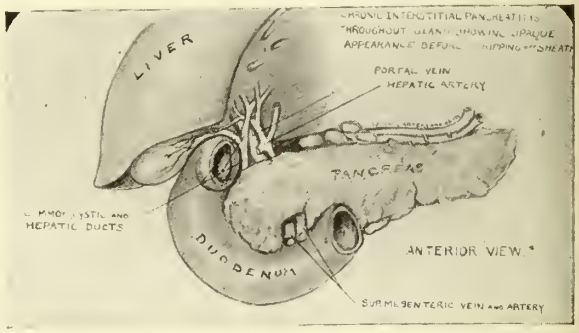

Fig. 3. Chronic interstitial pancreatitis.

down to the glands about the head of the pancreas and first portion of the duodenum, and finally into the interlobar and interlobular spaces of the pancreas itself. Thus we have cholecystitis, periductal lymphadenitis, peripancreatic lymphadenitis, pancreatic lymphangitis, pancreatitis, and cirrhosis of the pancreas. Our theory in this sequence of pathologic events is founded on a wide experience with the condition in all its stages. Sweet has shown that the head of the pancreas or the triangle of infection has a more intimate anatomic relationship with the biliary tract than has the body of the gland. It has been demonstrated by injection experiments that the lymphatics about the gallbladder and its ducts are in communication with those of the head of the pancreas and the first portion of the duodenum. The direction of lymphatic drainage may be influenced by inflammatory conditions and it is not uncommon to find a centrifugal lymphatic spread of infection as well as in the direction of the normal lymphatic flow.

We do not deny that there are other routes by which infection may and does reach the pancreas. Next in importance to the lymphatic route is direct extension by contiguity from the common duct to the pancreas. Burden has found that inflammatory reaction in the common duct is an almost constant accompaniment of cholecystitis, the reaction being particularly noticeable

It is possible also that infection may enter either the duct of Wirsung or the duct of Santorini and thus reach the pancreas. However, it has been shown that the lumen of a duct, in the absence of obstruction, is an improbable route for infection to become established in any gland. But the intrinsic and extrinsic lymphatics of a duct provide ready pathways for the extension of infection.

Mann and Giordano studied the bile factor in pancreatitis by making dissections of necropsy specimens and by experimental observations. They found that in only about 4.5 per cent of cases was it anatomically possible for a stone in the lower end of the common duct to cause bile to enter the pancreas; that the terminations of the two ducts were under the control of a common sphincter contraction which closed both ducts; and that bile injected into the pancreatic duct under the maximal pressure attained in any clinical condition failed to produce pancreatitis. They say, regarding the bile factor: "Our data conclusively prove that we must look elsewhere

for the explanation for the cause of most cases of pancreatitis."

The pancreas apparently enjoys considerable resistance to blood stream infection because it seems rarely to be affected in diseases which are characterized by a marked bacteremia. But that it is not entirely immune is evidenced by small discrete areas of focal necrosis and hemorrhage which are sometimes seen in the pancreas, capable of causing acute epigastric pain, collapse, etc., and simulating epigastric angina. Certain cases of ultra-acute pancreatitis, sudden in onset, like pulmonary embolism or peri-nephritic abscesses may be hematogenous in origin.

The liver and the pancreas have an intimate anatomic and physiologic relationship which also includes the gall bladder and the first portion of the duodenum. Disease of one of these organs is likely to affect other members of the group; a fact which is amply demonstrated in clinical experience. An example of such an effect is seen in the development of hepatic cirrhosis. This occurs essentially in two forms: a portal type,

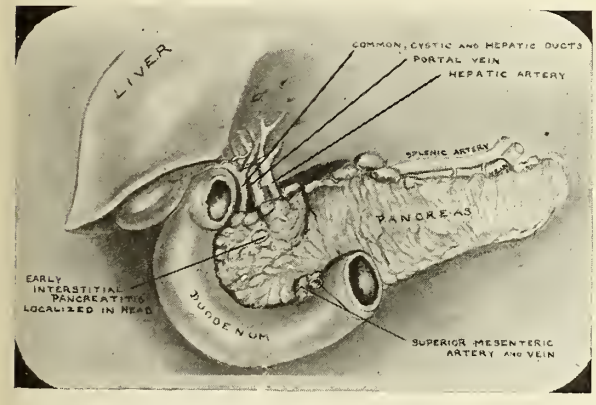

Fig. 4. Interstitial pancreatitis of the head.

the result of chemical toxic irritants carried to the liver from the intestinal tract; and a true biliary cirrhosis, essentially infectious in origin and most commonly following chronic calculus obstruction of the common duct. A localized form of biliary cirrhosis is seen in the right lobe of the liver in cases of chronic cholecystitis. The early stage of this condition is really a lymphangitis which is propagated along the numerous lymphatics which connect the gallbladder and the liver. In this manner hepatitis may be an antecedent of biliary cirrhosis. Similarly chronic pancreatitis characterized by an excessive deposit of fibrous tissue becomes pancreatic cirrhosis which is inflammatory in origin and is preceded by the stage of pancreatic lymphangitis. It is our belief, based on this conception, that there is a similarity in the modes of development of chronic pancreatitis and biliary cirrhosis. The two conditions are frequently associated. The head of the pancreas is the usual area affected, for the same reason that hepatitis is most conspicuous in the region of the gallbladder, because these sites have direct lymphatic connections with the infectious cholecystitis.

In pancreatic lymphangitis the head of the gland is enlarged, swollen and soft to the touch. In the later stage of chronic pancreatitis or pancreatic cirrhosis the gland is also enlarged but firm and resistant to the touch and its nodular character may easily be misinterpreted as malignant. Chronic inflammation of the head of the pancreas is seen either as a circumscribed or a diffused inflammation. I see more cases of the former. This depends entirely upon the number of lymphatic vessels carrying the infection, and their distribution. The lantern slides will illustrate this.

It has always been my practice in teaching to emphasize the point that gallbladder disease, disease of the liver and disease of the duodenum have other possibilities than simply the damage to these particular organs, i.e., widespread injury to the peripancreatic lymph glands and lymph vessels and in turn the pancreas itself. The presence of gallstones of themselves is of little moment; it is the infective agent causing the formation of the stones that counts. If the gallbladder, the liver and the duodenum are not relieved of this infection before its dire effects are spent upon the pancreas, with which they are anatomically, physiologically and pathologically so closely related, what can we look forward to but incurable sequelæ? These post-operative symptoms give the medical man his fling against the benefit of operation, while in truth it proves the danger of prolonged medical treatment of a condition that is truly surgical from the onset of the first symptoms.

Infection of the pancreas with its occasional tendency after cholecystectomy to remain chronic and produce fibrotic changes in the gland is often a cause of postoperative symptoms which may be attributed directly to the gland or to its influence

on the mechanism of discharge of bile from the lower end of the common duct.

The diagnosis of chronic pancreatitis is usually not made before operation. There are no factors in the clinical history upon which reliance

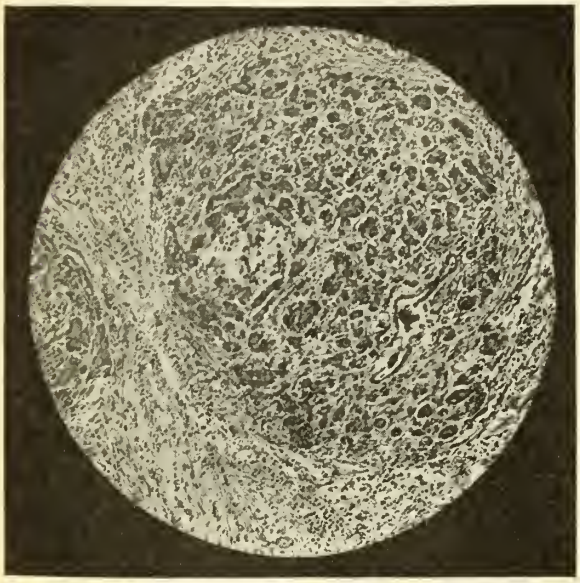

Fig. 5. Peri-lobular chronic interstitial pancreatitis.

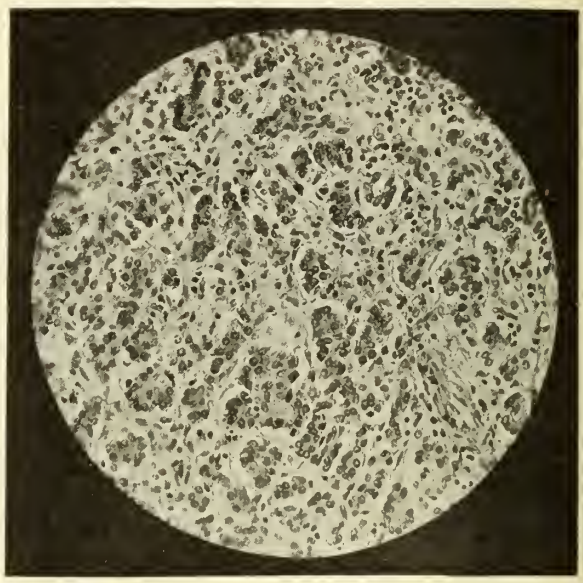

Fig. 6. Intra-lobular chronic interstitial pancreatitis.

can be placed. Physical examination, laboratory tests, examination of the feces and of specimens obtained by the duodenal tube, have little significance when compared with the findings at the operating table. The frequency of chronic pancreatitis as a sequel of cholecystitis and the inability to make the diagnosis except by operative findings make us extremely doubtful of the efficiency of medical measures in the treatment of this disease of the upper right quadrant of the abdomen. Diagnosis at the operating table is based on measurable facts—the only safe foundation for therapeutic procedure. The head of the pancreas can be readily palpated by inserting a finger in the foramen of Winslow. Before doing this we always palpate the periductal lymph glands and proceed downward toward the pancreas along the gastro-hepatic omentum. But a better way of palpating the pancreas is by carrying the index and middle fingers around and under the descending duodenum and the head of the pancreas, when with the thumb in contact anteriorly the head of the organ can be definitely palpated.

There are several routes for exposing the pancreas to inspection. It may be approached above the stomach through the gastro-hepatic omentum and below the stomach by separating the two anterior layers of the gastro-colic omentum from the transverse colon, the inter-colo-epiploic route. The choice of approach will depend upon the condition at the time of operation. In cases of acute and sub-acute pancreatitis follow what seems at the time the most direct route of approach. At operation my assistant is often asked to palpate the pancreas and he has no difficulty in verifying my findings. Indeed, the operating room nurse is sometimes asked to feel for the pancreas and to state her findings.

As my experience from intimate contact with disease of the upper right quadrant of the abdomen grows and ripens, I am becoming more and more convinced that the serious lesions of this region of the body, which are the most frequent in surgery, may be prevented or at least controlled by proper surgical attention to their early manifestations.

The treatment of chronic pancreatitis is a matter of prevention which is secured by the early recognition and removal of a diseased gall-bladder. Recently there have been earnest and worthwhile attempts to detect early and atypical cases of cholecystitis by roentgenologic technic. In practised hands this procedure has been highly successful, and we hope it will influence our medical colleagues to recommend surgical

treatment early in the course of the disease. We believe that its present state of development entitles it to the position of a confirmatory diagnostic aid. Machine diagnosis, however, can never supplant clinical wisdom. The experienced surgeon has so often seen the actual relationship between symptomatology and pathology that he has learned the significance of signs and symptoms. In the case of cholecystitis a faithful history and careful examination of the upper abdomen for deep tenderness and slight rigidity reveal simple facts that transcend in value the most elaborate laboratory tests. All laboratory tests fail to a greater or less degree. The surgeon must have the courage of his convictions. While it is true that pancreatic lymphangitis and chronic pancreatitis cannot be recognized before operation, such diagnosis is only of academic interest because from the practical and therapeutic aspects we must attack the disease in its early stages when it is confined to the biliary tract and when its presence is unmistakably manifested. The early symptoms of cholecystitis are not colic and jaundice but so-called dyspepsia. Likewise the early lesions are not gallstones and gross changes, but thickening and induration of the walls of the gallbladder, lack of muscular tone, enlargement of the regional lymph glands and often visible changes in adjacent areas of the liver. A keen knowledge of surgical pathology gained at the operating table and verified in the laboratory is highly essential in the treatment of disease of the biliary tract. Too often the surgeon does not remove a diseased gallbladder because he fails to recognize the early lesions of cholecystitis. It is almost unnecessary to remark that the ideal procedure is cholecystectomy.

In the pre-pancreatic stage when only the upper group of glands are enlarged, removal of the infected gallbladder is curative. The relief of symptoms and permanency of results which characterize the postoperative history of these patients add justification to our belief that cholecystitis is the antecedent of pancreatitis. In cases where the infection has extended further along the lymph tract to the glands about the pancreas and with enlargement of the head of the gland, we have secured good results by supplementing cholecystectomy with protracted drainage of the common duct by a T-tube which is kept in place for several months. Even in many of these late cases the results are satisfactory. This is evidenced in patients who, having been drained for only a short time, return with recurrence of symptoms. These cases clear up after drainage is re-established and kept up for a prolonged period of time.

In the advanced stage of pancreatic cirrhosis, when the gland is firm and sometimes nodular there is no means by which the condition of the pancreas can be improved. Sometimes as the result of fibrosis of the head of the pancreas the common duct has become obstructed and there is deep and constant jaundice. In these conditions the best procedure is to make a cholecystoduodenostomy, provided the condition of the gallbladder is suitable for anastomosis. When this is not possible and we feel reasonably sure that the condition is not malignant we drain the bile externally by a T-tube in the common duct and remove or drain the gallbladder as conditions warrant. This is not always satisfactory because the pancreatic obstruction may persist and external biliary drainage must then be permanent unless another and more formidable operation is done to unite the common duct to the duodenum at another site. It has been our experience that usually when common duct obstruction and jaundice are caused by chronic pancreatitis the appearance of the biliary tract resembles the condition found in carcinoma of the head of the pancreas, that is, there is no gross evidence of infection and the gallbladder is distended. This fact increases the difficulty of diagnosis but the obvious therapeutic procedure is to anastomose the gallbladder and the duodenum.

The mortality and morbidity of disease of the biliary tract and of the pancreas are intimately associated because of the causal relationship. The inference from this remark and the dictum of our dissertation, with which it is hoped you will agree, is that chronic pancreatitis is a sequel and complication of cholecystitis; that it develops through successive lymphatic changes which are often favored by the delay of protracted medical measures; and that may be readily prevented by timely removal of the diseased gallbladder.

DISCUSSION

Dr. W. J. Mayo: Mr. President, Ladies, and Gentlemen: I think I shall do better to discuss Dr. Deaver than to discuss pancreatitis. For thirty years my brother and I have been going at least once a year to attend Dr. Deaver's clinic in Philadelphia. At various times I have been asked, "Who best represents American surgery?" and I have always answered, "John

Deaver." Of American surgeons Dr. Deaver has been the least influenced by continental thought in surgery. He came to surgery through anatomy, a route that was followed regularly many years ago, and over which traveled the most eminent surgeons of the past.

From the Sixteenth to the Nineteenth Century, England was the center of the medical sciences. William Harvey in the Sixteenth Century not only discovered the circulation of the blood, but also put physiology on a sound basis. John Hunter in the Eighteenth Century correlated pathologic knowledge. His brother, William Hunter, greatly extended the science of physiology. We should not forget that it was the Hunters who made the great contributions toward the elucidation of the lymphatic circulation. In the middle of the Nineteenth Century preëminence in medicine passed to the French, largely because of Pasteur's work. Concurrently with great improvements in the microscope, the French gave sound teaching in surgical anatomy. In teaching surgery through anatomy the Scotch eventually played a great part, and today the fine Scottish school of surgeons at Edinburgh is called the anatomical school. There the most beautiful surgical dissections are carried out with a perfection of technic that always reminds me of the work of Deaver.

Preëminence in medicine later passed from France to Germany, owing to the work of Virchow and others in pathology, especially as related to diseases caused by microörganisms. Much of these studies dealt with pathology of the dead house which, while of educational value, did not directly help the patient. The English and, I think I may say, the American surgeons have developed clinical surgery based on the pathology in the living, which knowledge benefits the patient studied. In this great work no one has played a greater part than John B. Deaver. He has been outstanding in his insistence on sound anatomy. He has contributed greatly to the literature of anatomy and, from the surgical standpoint, has published the best textbooks on antomy in the English language.

Many people make statements which they maintain at any cost, and in so doing proclaim closed minds. Dr. Deaver discusses facts as they look to him, calls a spade a spade, and supports his belief staunchly. He has an open mind, however, and when new truths are discovered and he is convinced that they are truths, he discards the old and strongly supports the new. Last, but far from least, he is a great teacher of surgery, who teaches with a saving sense of humor.

LITERATURE AND MEDICINE

Physicians need to prescribe for themselves the tonic of the muses, in the opinion of Dean Irving S. Cutter of the Northwestern school of medicine.

Extracts from the rich literary and historical background of the profession are his prescription against the mental poisoning which will make the doctor or the dentist see his work as a grind.

Robinson Crusoe, Keats, Shelley and Sherlock Holmes provide some of the reading, all related to the medical profession in some degrec, which Dean Cutter recommends to the fraternity.

SOME SHORTCOMINGS IN THE SURGERY OF CLEFT LIP AND PALATE WITH SUGGESTIONS FOR MEETING THEM*

ROBERT EMMETT FARR, M.D.
Minneapolis

General Considerations: Even in the hands of the expert in the management of cleft lip and palate cases the mortality and morbidity are discouragingly high, while in the hands of those who possess no special training or aptitude for this class of work the results are generally bad. There are at present too few surgeons who are well trained in plastic surgery to treat these unfortunates, and perhaps too many general surgeons who are only too willing to attempt it.

Broadly speaking, it is probably true that the results will not materially improve until a department has been established in every medical school for teaching the principles and practice of plastic surgery and each community is supplied with its quota of men who are properly trained for this kind of work. Johns Hopkins, at the suggestion of Staige Davis, has already established such a department.

An analysis of my work has left me with a retrospect of too many failures and too high a mortality when I compare my results in the treatment of cleft lip and palate with my other surgical achievements, unsatisfactory as the latter may have been.

It is my purpose in this message to consider some of the causes of my failures, as these causes no doubt closely correspond to those of others who have attempted this type of work. I also wish to suggest some points in technic and management which have aided me during recent years.

Mortality: The high mortality in cleft lip and palate is due to various factors. Important among these is the fact that these children are, as a rule, below par and many of them do not reach maturity even though no surgical attack is made upon them. Most of them must undergo multiple operations. The technic is more or less complicated, especially for those who treat a case only occasionally, and the operation is apt to be unnecessarily prolonged or hurriedly performed.

*Read before the Minnesota Academy of Medicine, St. Paul, Nov. 10, 1926.

Many cases are operated upon without the proper preparation under a pediatrician and are therefore unfitted to undergo the ordeal. Post-operative care is not properly supervised.

Morbidity: Too often reparation is attempted without due consideration of the principles involved. Technical pitfalls are not anticipated. Also early cosmetic rather than later functional results are the surgeon's objective. Lack of a definite plan of procedure and the necessary armamentarium prolong the operation and hurry the operator unduly, especially toward the close of the operation. Lack of experience is sure to interfere with team-work on the part of the surgeon and his assistants, especially the anesthetist, who should act as the second assistant. A vacillating technic thus results in prolonging the operation, increases the amount of anesthesia and interferes with "smoothness" and the completion of the operation with dispatch. No attempt will be made to elucidate all of the points enumerated above as a reference to most of them should be ample.

Fig. 1. Brophy wiring for reposition of the bones. Photograph shows ends of wires taped with adhesive during the interim of the "two-stage" operation.

General Technic: Children should be securely but humanely anchored to the table. This allows the assumption of the Rose position which decreases the liability of aspiration and improves the opportunity for intra-oral observation. Ether anesthesia is our choice for children and it is best induced by the ethylene-ether sequence. As soon as the child is completely "under," the sterile curved tube of the Junker apparatus should be inserted in the angle of the mouth and while a nurse operates the pump under the surgeon's direction, the anesthetician "scrubs up" and takes her place as second assistant. Not a moment should be lost and though haste is to be deprecated, speed is most essential. Complete, although light, anesthesia, is a *sine qua non.* Suction should replace sponging intra-orally and blood should not be aspirated or swallowed by the child.

As the field is already unsterile the matter of asepsis is relatively unimportant. Infection following operations is usually an indication that the individual was operated upon at an inopportune time.

Special Technic. Reposition of Bony Parts: In all cases of complete cleft palate the early reposition of the bony parts after the method introduced by Brophy has a marked influence in correcting the nasal deformity and narrowing the diastasis in both lip and palate and brings the bony parts into proper apposition. There are many objections offered to this procedure. Further experience will be required in order to prove that its disadvantages outweigh its good offices.

My first suggestion for a departure from the orthodox is that in carrying out this operation in extremely bad risks the mortality may be lowered by operating in *two stages.* The condition of the child must be one's guide. In the first stage, the wires are introduced and after the condition of the child has improved, the alveolar borders may be freshened, the lead plates applied and the bones brought into apposition. During the interim the wires may be taped with adhesive and allowed to project from the baby's mouth (Fig. 1). Additional safety may be offered some children by resorting to this plan of procedure.

The Lip: It is not the writer's intention to go into detail regarding the technic of repair of cleft lip. There are many excellent methods described for its reconstruction. A few points only will be stressed and one or two innovations suggested.

The following facts should be remembered: Transverse incisions along the base of the nose around the alæ and incisions along the "laughing wrinkle," i.e., through the inner edge of the M. *caninus* and mesial to this muscle and the M. *zygomaticus*, result in an almost imperceptible scar (Fig. 2). The separated ends of the M.

As soon as the lip has become solidly united the outer border should be stretched downward and mesially as shown in Fig. 4. Only a slight amount of traction should be made and this exercise should be carried out daily.

The Nose: An unsightly nasal depression is a frequent morbid result of cleft lip operations.

Fig. 2a. Site of incisions along base of nose, around ala and along "laughing wrinkle." Incisions along these lines result in a minimum visible scar.

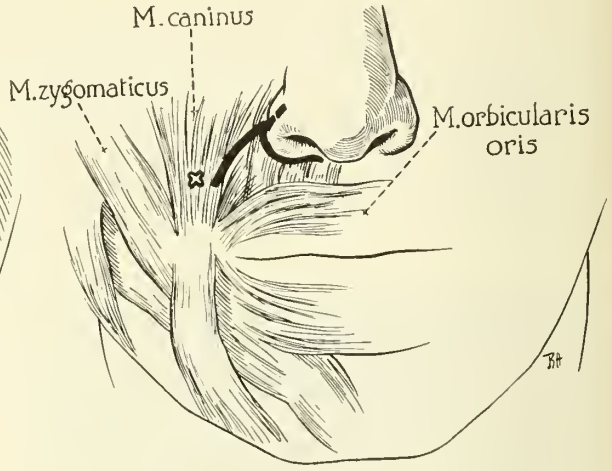

Fig. 2b. Shows that proposed incisions avoid important muscles. X represents the site of important artery which should not be severed.

Note—As the lip is drawn mesially the outer angle of the incision along the "laughing wrinkle" approaches the nasal ala and almost disappears. Lip tension is decreased by this incision.

orbicularis oris should be brought into as perfect juxtaposition as possible. The line of union may be straight, as in the classical operation, or diagonal, as in the Owen operation or one of its modifications. In paring the mucous membrane the edges which are to be approximated should be cut slightly on the diagonal. This may be accomplished by slanting the scalpel so that its point is directed somewhat outward as it approaches the oral cavity (Fig. 3a). This contributes in part to the much needed thickness of the lip. If still greater thickness is demanded, each border of the lip may be split vertically as illustrated in Figure 3, a and b. After suturing the mucous membrane, wide, permanent tension sutures should always be employed (Fig. 3c).

Regardless of the technic employed for its restoration the lip is prone to appear retracted and thin when compared to its fellow. This is especially true when early lip repair is depended upon to bring the separated alveolar processes together. Here lip tension is the force demanded by this procedure.

For the purpose of overcoming the retraction, thinning and tension of the lip, the writer would suggest the following or second innovation:

Wide separation of the alæ or a deflection of one of them also frequently occurs. In order to overcome the first, the writer suggests the following procedure: Place a towel pin with its points through the septum at the tip of the nose (Fig. 5), as an elevator. With a blunt-pointed scissors mobilize the prolabia. The third innovation which the writer wishes to suggest is that, if indicated, one should not hesitate to divide the nasal septum at its base until the tip may be elevated to the desired position. Incisions about the alæ may also be indicated in order to bring about the desired effect (Figs. 2 to 5). The nostril or nostrils are now formed and if the incisions have been properly placed, a symmetrical nose accrues. In the bipartite type, a wide mobilization of the depressed ala is usually all that is required. In the tripartite type the writer would suggest a fourth innovation—the utilization of the prolabia for a continuation of the columella, which will invariably be found too short after the necessary elevation of the nasal tip is accomplished. The use of the prolabia as a portion of the lip is of questionable necessity. Even

with the utmost care, it may become a cosmetic menace as growth progresses (Fig. 6). Its muscular and therefore functional element is probably negligible and it may, we believe, be sacrificed for cosmetic purposes.

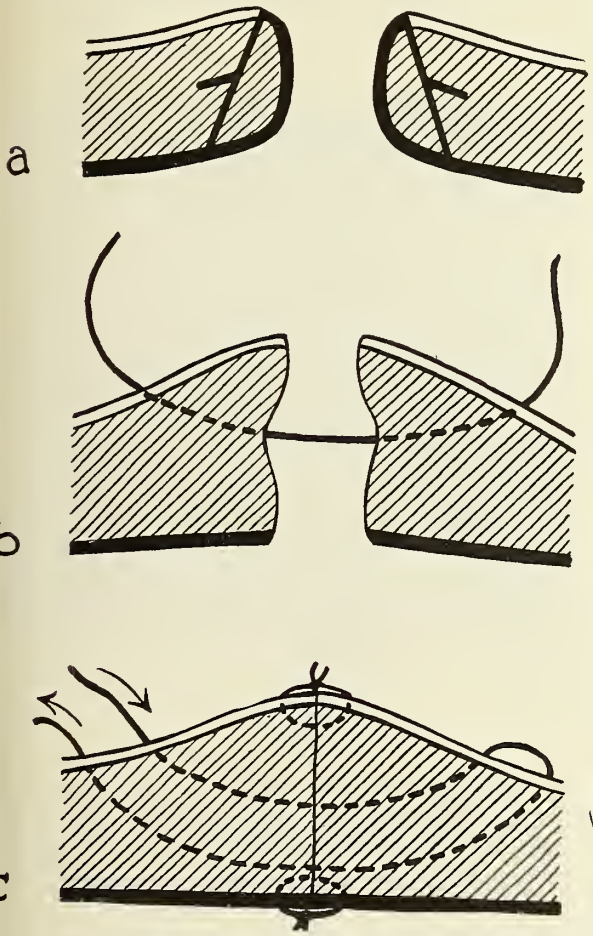

Fig. 3. Cross section of cleft lip. a. Shows direction nd site of incisions. Diagonal incisions plus a vertical split dds much needed thickness to the lip. b. Shows mattress ension suture passing through the angle of the vertical split, eturning through the deeper tissues. c. Shows the result of he application of the principles suggested in a and b, additional thickness.

A fifth suggestion is that lip tension be more often reduced by the use of incisions along the laughing wrinkle" (Fig. 2).

While the repair of cleft lip presents technical difficulties which are calculated to absorb a surgeon's attention to the full, an estimation of the child's resistance must receive the most careful consideration. Every effort must be made to complete the operation as quickly as possible and with the minimum amount of anesthesia, hemorrhage and trauma. The inevitable trauma, a moderate loss of blood and prolonged anesthesia too frequently result in death from shock.

In children, especially those with the tripartite cleft, the writer would suggest a sixth innovation—the performance of the lip operation in two stages. In the first stage, complete mobilization is carried out and the nasal defect only overcome; in the second stage—after the lapse of a few days—the borders of the lip are freshend, and, if necessary, lateral incisions for the relief of tension are made and the sutures applied (Figs. 2-5).

The Palate: The failure to obtain union of the soft palate may be due to some unrecognized infection about the oral mucous membranes at the time the operation is performed, or to errors in technic during its performance. These may consist of trauma to the soft tissues, rupture of the posterior palatine artery, an incomplete mobilization of the flaps, or the application of too great tension upon the sutures.

Given a case in which the palate has not been previously operated upon, the following plan is suggested: *Equipment*—Three special elevators (Fig. 7) answer almost every purpose. In making the elevation the greatest difficulty arises

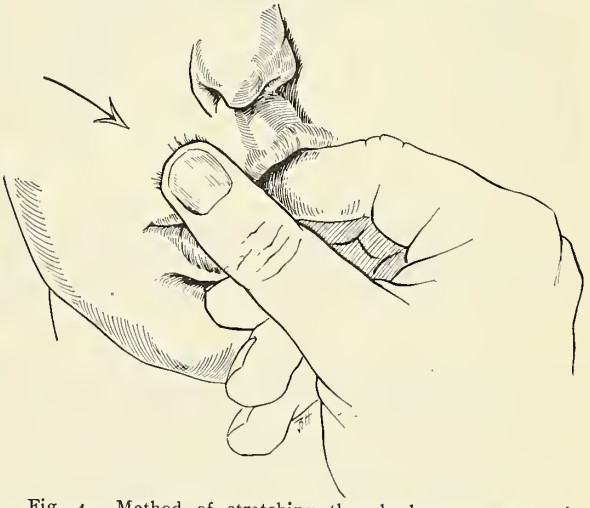

Fig. 4. Method of stretching the cheek; a postoperative exercise suggested for the purpose of decreasing tension and retraction of the lip.

mesially at the junction of the hard and soft palate. At this point a sharp-pointed scalpel is passed through the soft tissues less than one-eighth of an inch from the mesial border, where an incision one-half inch in length is made. The posterior border of the bony palate occupies the center of this incision (Fig. 8). Through this incision the point of a Crile dissector (Fig. 7a) is introduced against the bone and with it the dissection is begun. The elevator (Fig. 7b) is now

employed. By grasping its handle firmly and keeping its point forcibly in contact with the bony surface, and with a prying to and fro motion, forcing the handle of the instrument away from the midline, the mucoperiosteum of one side may be completely freed in a few moments.

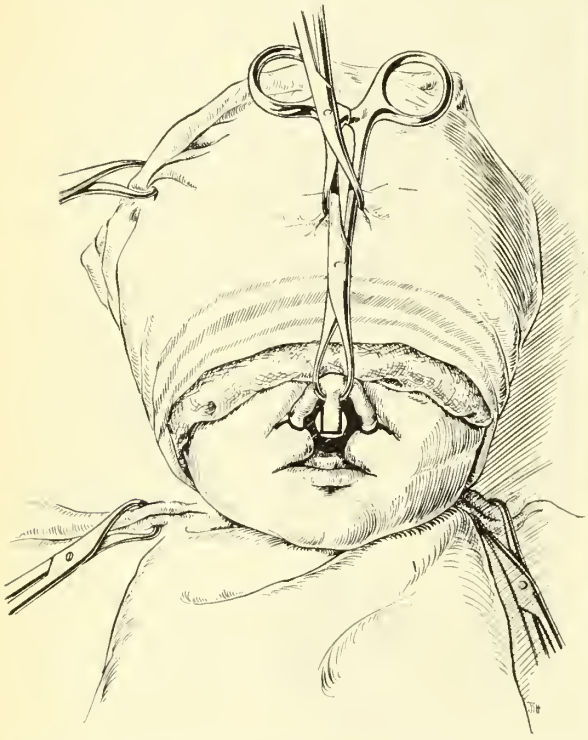

Fig. 5. Simple and efficient method of controlling and elevating the depressed nasal tip, direction of incisions about alae and the prolabia when the latter is to be used as a prolongation of the columella.

Avoidance of Injury to the Posterior Palatine Artery: As rupture of this artery on either side is inimical to success in every cleft palate operation, the technic of the mobilization of the tissues in which it lies often becomes the crux upon which success or failure depends. Its injury may be avoided in the following manner: Approaching from in front, after the anterior portion of the palate has been mobilized, the elevator (Fig. 7c) is introduced behind the border of the bony palate and its point directed upward, i.e., toward the base of the skull and deeply into the soft tissues. It is first carried upward and backward toward the velum. By this means the soft palate is put on the stretch and its mesial mucous membrane may be severed with a scissors as close as possible to its nasal attachment. The elevation is now continued outward posterior to the last tooth and toward the cheek. The curved point of the elevator should be directed toward the base of the skull and every effort exerted to prevent perforation of the soft palate just posterior to the last tooth. The

Fig. 6. Photograph of a four year old child operated upon by the writer when she was ten weeks old. Prolabia was used as a portion of the reconstructed lip with a bad cosmetic result.

mobilization should be continued until the tissues of the palate, when held in position by hooks, will overlap at least one-half inch. It may not be unwise to encompass the distal end of the ele-

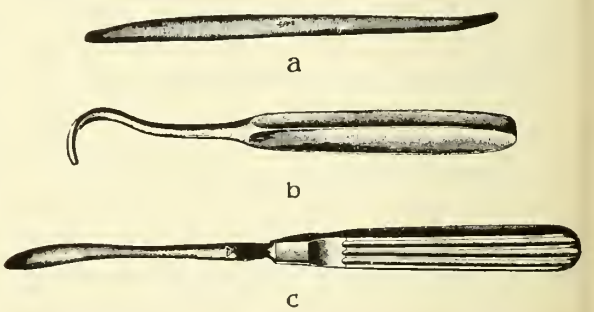

Fig. 7. Three types of elevators which greatly facilitate the mobilization of palatal flaps.

vator with a small gauze sponge when working in the region of the posterior palatine. A complete freeing of the soft tissues in the manner described will almost invariably obviate the ne-

cessity for making lateral incisions in primary operations. In cases which have been previously operated upon, or in which perfect bony approximation has not been accomplished, lateral incisions are usually necessary.

The seventh innovation to be suggested is the two stage or delayed suture of the flap in closing palatal clefts. The writer believes that the mortality may be lowered in certain instances by resorting to the two stage operation. In secondary palate operations, or even in primary ones, the method may be used. Only a few days should elapse, as the secondary suture of the flaps should be accomplished before they have had sufficient time in which to contract. It is not improbable that in all secondary operations, especially when the blood supply has been restricted by a former operation, the two stage method will give a higher percentage of successes, even though it is not necessitated by the poor condition of the patient. In suturing the palate, redundancy of soft tissue will allow the inversion of the suture line toward the oral cavity with a wide approximation of the flaps. In other words, a side-to-side rather than an edge-to-edge union should be one's objective.

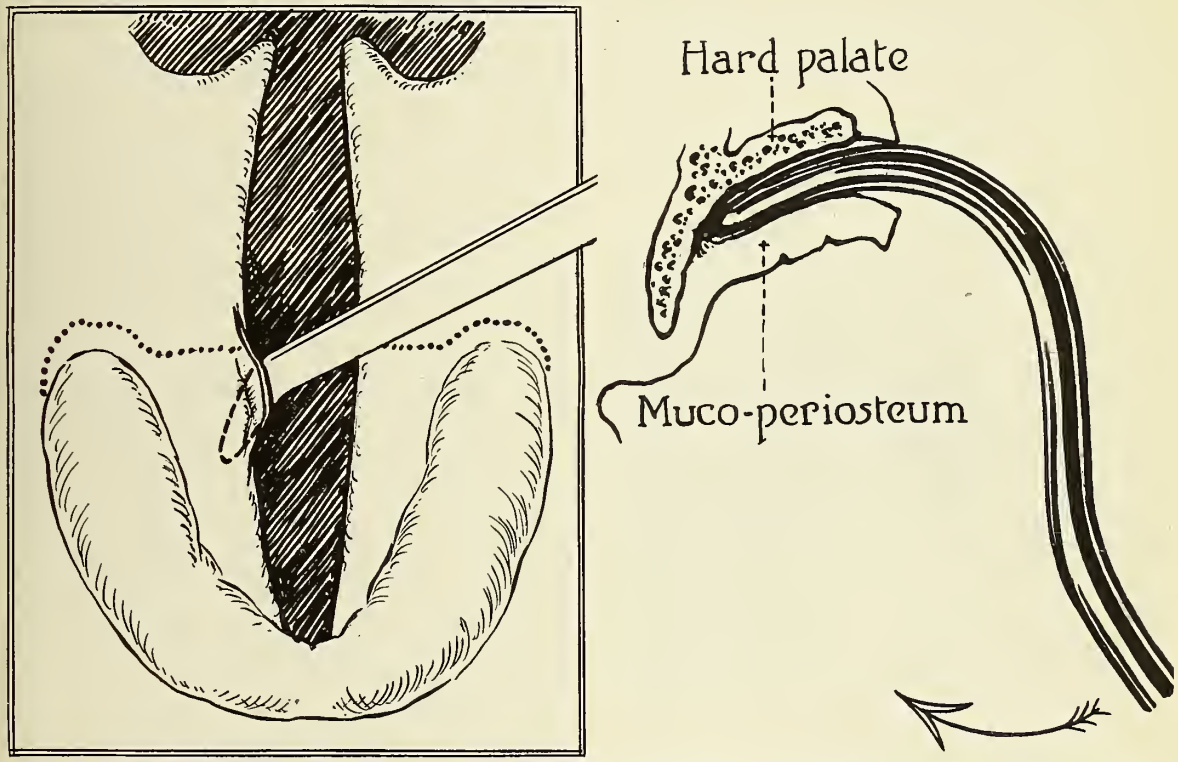

Fig 8. Mobilization of the palate without the aid of lateral incisions. a. Crile elevator, Fig. 7a, is introduced through a short incision at the junction of the hard and soft palate. By this means the posterior border of the hard palate is defined. b. Elevation is completed by means of elevator shown in Fig. 7b. The elevator shown in Fig. 7c is an excellent one for mobilizing the posterior or soft palate (see text).

SUMMARY

The management of cleft lip and palate is difficult and the results often unsatisfactory.

More highly specialized training is desirable.

Methods of procedure are not as yet standardized.

The following innovations are suggested:

1. The Brophy wiring may be done in two stages.

2. Postoperative manual stretching of the lip will relieve tension, increase redundancy and prevent its thinning out.

3. The nasal septum may be divided at its base to allow proper elevation of the nasal tip.

4. The prolabia may be used as a prolongation of the columella rather than a portion of the newly constructed lip.

5. Lip tension should be more often relieved by making incisions along the "laughing wrinkle."

6. Cleft lip may be closed in two stages.

7. The delayed-flap method of suture of the palate may be indicated in certain cases and in every case of failure to obtain union a secondary suture should be made during the second postoperative week.

DISCUSSION

Dr. H. P. Ritchie (St. Paul): Dr. Farr's paper has been most interesting to me. He has had a very wide experience which antedates mine in this field of work and his opinions must receive earnest attention. He brought up, amongst other things, two questions which are debated in the literature. One is wiring of the bone for closure of the process cleft. Quite a number support Dr. Brophy. There is an equal number who say that this should not be done because such a procedure causes a lack of development in the bone which, as the patient grows, results in the deformity of a projecting lower jaw beyond the upper, a condition of apparent prognathus. So we have a divergency of opinion as to whether we should use wires in closing the alveolar process.

With the lip also we have a number of views; I believe there are something like ten or fifteen different plans for repair of the lip. The lip problem has been approached as a plastic repair and there are so many different angulated, curved incisions that one is at a loss as to what should be done. To my own satisfaction I have worked this out as a general surgical operation, by which a functionating lip can be obtained by bringing the orbicularis oris muscle together in the line and plan of its action. What we should do then is to demonstrate this muscle by the Faradic battery and bring it together.

Dr. Farr mentions the bilateral aveolar cleft, calling this case tripartite. He suggests that the prolabium should be removed. But there is no question but what it appears in every normal lip and therefore I believe it should be preserved, as I believe the length of the lip on the skin side is determined by the length of the prolabium. In all normal individuals we have the mucous membrane everted.

I think Dr. Bropy is right on the alveolar process cleft and that in cases of wide process cleft we must hold this down with a wire so that a lip can be done without severing all the normal relations of this wonderful musculature of the face and the underlying bones. I think Dr. Brophy is absolutely wrong about the hard palate cleft. I believe that lateral pressure on that cleft will result in the high arched palate as a result of the mechanical pressure.

The mortality in these cases can readily be controlled by erasing the idea that any procedure is an emergency procedure. These babies must be distinctly on the gain before operated. They must be operated on without doing too much at one time. Pediatrics has come to such a point that I think no surgeon should undertake these operations unless he has the O. K. in writing of the pediatrist that it is safe to do the necessary work. I believe we should erase from the lip repair the plastic idea, and approach it from the standpoint of function, and replace these tissues as nearly normal as possible with the idea that the future growth of that baby will eventually classify our work.

Dr. Farr: I wish to thank Dr. Ritchie for his discussion and the elucidation of many points I have not had time to cover in my paper. I feel that the crux of the problem is to treat each case in a comprehensive manner and to operate by the fractional method, also that each surgeon should use methods which in his own experience give the best results until the masters have standardized the technic. If, for instance, a certain type of lip operation is followed, one will soon familiarize himself with it and obtain satisfactory results. Future function rather than immediate cosmetic perfection should be the aim.

I visited Dr. Brophy frequently for many years and observed his work and his results. I have seen the Brophy procedure attempted by many surgeons, but have never seen Brophy's technic exactly duplicated. Brophy does not interfere with the germinal tooth roots, nor does he "crush" the superior maxillary bones; the bones are pressed together and the wires are used for the purpose of holding them in contact.

Blair is veering away from the Brophy plan and claims that the superior maxilla does not grow in proportion with its fellow after the reposition. I cannot understand why this should be. Provided the wires are introduced too high the future teeth may be interfered with, the alveolar processes may be deflected, future bony development will be faulty and the teeth will be irregular and badly directed. I believe this operation is seldom carried out in accordance with Dr. Brophy's directions; in his hands the results are the best I have ever seen.

Up to a few years ago it was Dr. Brophy's custom to show twenty-five or thirty cases during meetings of the American Medical Association and his demonstrations were most convincing. Unfortunately very few surgeons remained for these demonstrations. One could see there patients that had been operated upon ten, twenty or even thirty years before. They looked well and spoke well.

Considering the mortality of the wiring operation, we must not forget that over thirty years ago Dr. Brophy performed his first two-hundred and eleven (211) operations without a death.

To return to my paper, my intention was to stress the possibility of lowering the mortality by more often operating by the fractional method and the morbidity by aiming to get functional as well as cosmetic results. Of the innovations suggested in my paper the most important is, I believe, the closure of the palate in two stages. I have not seen this suggestion in the literature, but I believe a secondary attempt to close the palate from seven to fourteen days after failure is of sufficient merit to well repay us for the time spent in this discussion.

Dr. A. T. Mann (Minneapolis): I have done this same thing, and if you can do it before the tenth day you will not have to pare the parts because your granulation tissue is there and will heal more promptly than a fresh wound.

A CLINIC ON SURGERY OF THE STOMACH*

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It will be our aim to show or simply report a few cases of varying types of conditions without attempting in any way to cover this large field.

As demonstrating the freakishness of some injuries to the stomach let me report to you the findings of a case which came into the hospital in a condition of shock, quite inordinately pronounced considering the findings at operation. A policeman had been shot. In the greater omentum, which was very bulky, a small suggillated opening was seen. It corresponded with the wound of entrance on the skin. Underneath the omentum, quite near its insertion, a bullet hole was seen in the transverse colon. Neither on the body surface nor in the abdomen was there another wound found. The man was quite fleshy. He had surprised some robbers in a store, who crouched down behind some furniture and shot at him. A slightly upward course of the bullet was anticipated. The transverse mesocolon was incised in the search for a possible effusion in the lesser peritoneal cavity and for further exploration. Nothing was noticed except a slightly hemorrhagic area, quite small in extent, in the gastro-colic ligament. Nowhere was there an extrusion of intestinal contents, nowhere a marked hemorrhage. The condition of the patient demanded prompt finishing of the operation. He died under gradually increasing symptoms of shock. The autopsy revealed a most remarkable course of the bullet. Besides the one bullet wound in the colon there were three more holes in the hollow viscera, every one of them extraperitoneal and none of them therefore causing an escape of contents into the peritoneal cavity (Fig. 1). The bullet had entered the omentum, had run upward and backward, penetrated into the transverse colon and left it at the upper posterior side to follow an extraperitoneal course in the bulky gastro-colic ligament and to enter the greater curvature of the stomach. It left the stomach again near the pylorus extraperitoneally, entering the pancreas, and finally was stopped by the vertebral column. It had passed between aorta and vena cava, injuring neither of them apart from a tear 1 cm. long in the intima of the aorta. We found a hemorrhagic imbibition of the prevertebral tissues and a hemorrhagic cavity with necrotic looking walls, located in the head of the pancreas. The stomach was full of midnight lunch, too coarse too have been removed by the stomach tube. The death resembled much the prompt collapse one sees in acute pancreatitis, and I will follow this thread to say a few words about the differential diagnosis between acutely perforating ulcer of the stomach and other acute conditions of the abdomen.

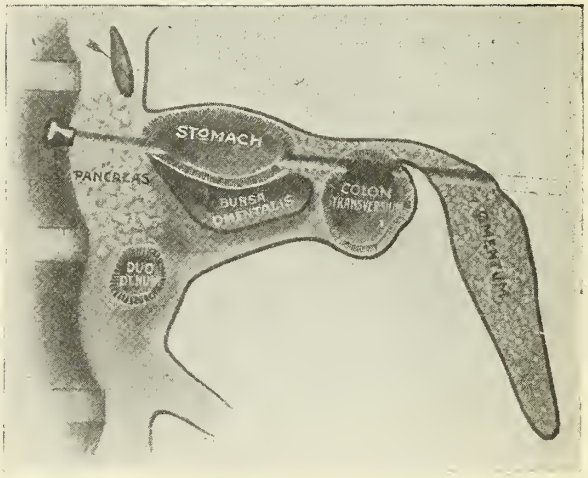

Fig. 1. Tract of bullet entering omentum, perforating transverse colon and stomach by one intra-peritoneal and three extra-peritoneal wounds.

Before all let me say that quite often the behavior of the patient as seen from a distance, and the history of the case, will give you the most valuable information. Permit me to emphasize this by a concrete example. I was called toward midnight some time ago by the house surgeon of one of our hospitals. An acute abdominal condition in a patient, just brought in, had to be taken care of. I asked for the doctor's opinion. He thought it looked like an acute gallbladder or a perforating appendicitis. I wanted some anam nestic data, probably somewhat reluctant to get up out of my first sleep. He said, the patient, a street-car motorman, had been working right along, even after supper that evening. He was a very strong appearing man and had not had previous abdominal or gastric symptoms; his pulse was good and full. He was lying motionless in

*Read before the Minnesota State Medical Association, St. Paul, May 17-19, 1926.

the bed, moaning from excruciating pains all over his abdomen. The abdominal walls were as hard as a board. These points were not as much volunteered as brought out on questioning. They are seen by everybody but may not be noticed in particular by those who are not aware that they

Fig. 2. Hour-glass spasm and notch at lesser curvature, simulating a penetrating ulcer of the lesser curvature and an hour-glass constriction.

Fig. 3. Same case as Fig. 2, findings at operation; calcified lymph node in lesser omentum.

are of prime importance and are really telling what is wrong in that abdomen. "Doctor," I said in as friendly a way as one just waking up from a well earned sleep is able to, "it is neither." "Well, what do you think it is?" "I think it is a perforated ulcer; I shall be there right away. Get things ready for immediate operation." These symptoms were classical for a perforated ulcer: The patient moaning from severest pain, lying motionless on his back, the muscles of the abdomen boardlike, but the pulse full and pounding.

Why was it not an acute pancreatitis just as likely? Because the pulse was full and pounding; because there was not the predominant picture of collapse. The pain in a peracute pancreatitis is the worst there is; it is absolutely overwhelming. *In pancreatitis of the peracute type* the initial symptoms are a very rapid onset of these overwhelming pains together with the unmistakable early symptoms of severe collapse, the consciousness of impending death, the thready pulse, the rapid fading away of all resistance. The abdomen is hard, but not as boardlike as in a perforated ulcer; the pain is rather more localized to the upper abdomen and the patient is not holding himself in such an absolutely immobile position.

Now take an *acute gallstone colic*. The pain is at times simply excruciating, but it usually changes somewhat in intensity, and instead of carefully remaining in the same position, the patient rolls about, doubles up and constantly changes the position. The pulse is good, there is no collapse; the region of the right border of the ribs is the most tender to pressure. The history often helps to point toward gallbladder trouble. In severest forms of acute or even gangrenous cholecystitis with a peritoneal exudate the patient, to be sure, holds himself quiet, but the pain is then worse over this area.

In renal colic the abdomen is not as extremely hard and there is usually a hint in the history. A suddenly rupturing appendicitis again will keep

the patient rather motionless. The pain is great, but not as severe as in any of the mentioned conditions of the upper abdomen; there is a history of abdominal pain or discomfort for probably several days or a week, and mostly previous minor attacks. The pain may be all over the abdomen, but the tenderness is severest over the lower parts.

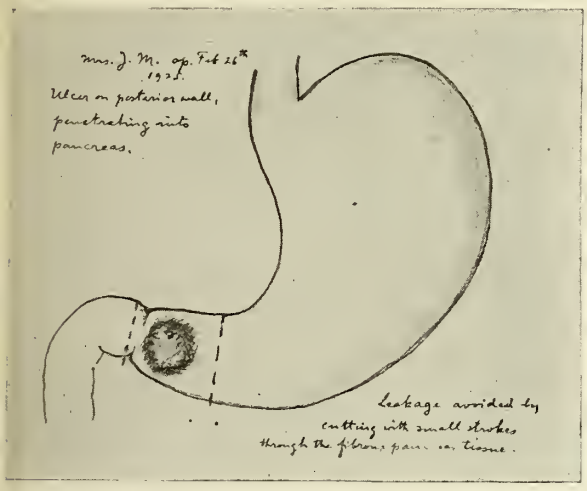
Mrs. J. M. op. Feb 26th 1925.
Ulcer on posterior wall, penetrating into pancreas.
Leakage avoided by cutting with small strokes through the fibrous pancreatic tissue.

Fig. 4. Mrs. J. M. Ulcer penetrating into pancreas. Lines of resection.

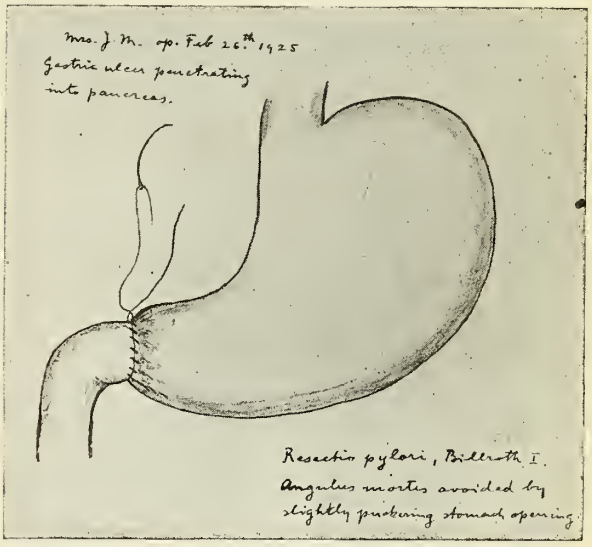
Mrs. J. M. op. Feb 26th 1925
Gastric ulcer penetrating into pancreas.
Resectio pylori, Billroth I.
Angulus mortis avoided by slightly pushing stomach opening

Fig. 5. Same as Fig. 4. Billroth 1 without angulus mortis.

What is the best treatment for acutely perforating ulcer? Our standpoint in case of duodenal perforation, which is the most frequent, is: Practically never flushing of the peritoneal cavity, as any case which comes to the hospital in a still operable condition has a *local* soiling of the peritoneum, even if the contents appear spread far over the whole abdomen. All of the peritoneum is not involved. We mop with moist cloths and afterwards insert a large moist (not wet) gauze into the Douglas pouch, this manipulation to be done without damaging the endothelial lining. This gauze is to remain for gradual absorption of whatever fluid gathers during the further procedures of the operation, which consist, if it can be easily done, of excision of the ulcer, otherwise of closing the perforation by suture and of a gastro-enterostomy. Of late years we have added to the latter procedure the tying off of the plyorus with a double forty-day chromic catgut, a strip of fascia or the round ligament of the liver. This is not much additional work and insures rest for the ulcer area in the duodenum, at least during the most critical time. This same thing we do in non-perforating, but bleeding duodenal ulcers.*

This being a clinic and not a regular discourse on surgical diseases of the stomach, allow me to show you some sketches of cases operated upon rather recently. They will illustrate some of the varied problems, and at the same time each one has some interesting peculiarities.

Figure 2 is an *x*-ray picture of a stomach with a constant hour-glass constriction far up toward the cardia. On the lesser curvature you see a bulging like a niche. We thought we should find an ulcer at this point and a spastic contraction simulating an hour-glass stomach. We were therefore not surprised to find that this constriction had disappeared in narcosis, but there was no ulcer either. The apparent niche was the shadow of a calcified lymph node (Fig. 3) in the gastro-hepatic ligament, as the sketch shows. Firm adhesions to the abdominal walls due to a former operation for appendicitis twenty years ago were found in this case and were divided. The patient is completely relieved of the food discomfort which had existed for eighteen years. He later came to the office to thank us for the relief he has experienced.

Gastric ulcers may be excised with knife or cautery. To counteract a re-formation, a gastro-enterostomy ought to be added. The best re-

*Very recently, since reading this paper, we have excised an acutely perforated duodenal ulcer and included in the excision the anterior portion of the pyloric sphincter, as Judd advised in non-perforated cases. The result was excellent.

sults we get, however, undoubtedly by resecting the pylorus and this is the method of choice. If a Billroth 1 can be done, the anatomic result is most satisfactory. The weak spot in this procedure is the junction of the suture which reduces the size of the stomach opening with the

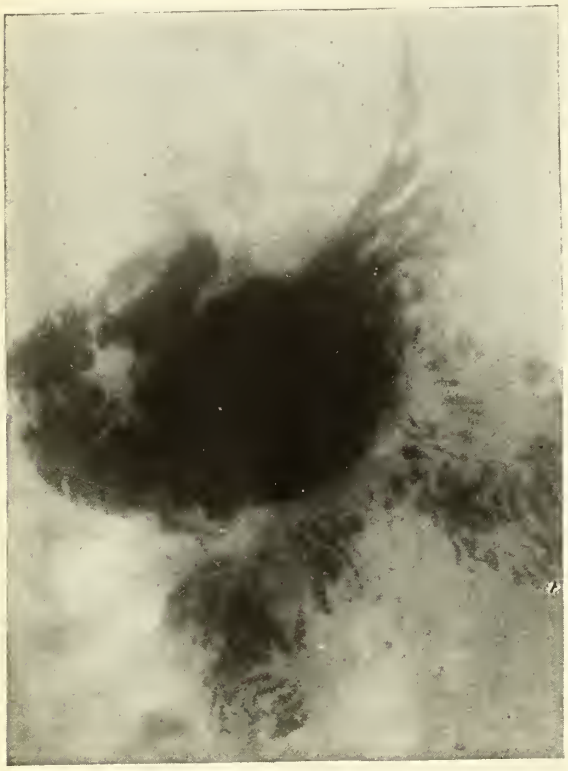

Fig. 6. Same case as Figs. 4 and 5. X-ray after resection showing normal condition.

circular suture of the new gastro-duodenal anastomosis. This point was called the *angulus mortis,* and in order to avoid it Kocher closed the stomach entirely at the line of resection and then implanted the duodenum into the posterior wall of the stomach. This seems, however, an unnecessary complication, because the tension at the line of anastomosis is of course increased as we displace the opening in the stomach to the left. And any tension in the suture must be avoided as very dangerous.

The lady, you see here, Mrs. J. M., sixty years old, was operated upon Feb. 26, 1925, for a gastric ulcer by resection of the pylorus (Fig. 4). The ulcer had penetrated toward the pancreas. With long shallow cuts the pyloric portion together with the fibrotic bottom of the ulcer was removed, making use of the fibrous thickening of the pancreas. Opening of the ulcer bottom and soiling of the field of operation was thus avoided. The resected area was 7 cm. long at the lesser curvature, but the duodenum being rather free, a direct end-to-end union between stomach and duodenum according to Billroth's method No. 1, could be made (Fig. 5). As the stomach was not very wide at the site of resection, the two openings could be circularly united by simply taking larger bites on the stomach side, and thus avoiding a partial closure of the gastric outlet by a separate suture, which always leaves the weak *angulus mortis.* This case has its interest therefore in two points: first, that the resection of the pylorus could be performed without leakage though the ulcer had penetrated rather deeply into the pancreas, and, second, that the *angulus mortis* was avoided, and an ideal anatomic configuration was thus possible. The patient can eat everything and feels entirely well. An *x*-ray of the stomach taken a few weeks ago, *i.e.,* fourteen months after the pylorectomy shows a nice duodenal cap and practically a normal picture (Fig. 6). If the Polya operation of attaching the jejunum to the line of resection of the stomach is made, this *angulus mortis* is avoided.

Fig. 7. Mr. V. A. P. Ulcer of duodenum.

The second patient who kindly consented to come here, Mr. V. A. P., 31 years old, also had a condition of special interest. He was operated upon on March 15, 1925, for a duodenal ulcer, which was far up under the ribs. The *x*-ray (Fig. 7) had shown a large sparing out at the farther end of the duodenal cap, which was present on all the films.

A gastro-jejunostomy was decided upon. The stomach was lifted out of the abdomen to reach for the emerging jejunum under the colon, but no colon was seen. No jejunum emerged. The omentum was rather moderately developed and had its attachment mainly to the left half of the stomach. We saw the peritoneum run from the under surface of the omentum toward the posterior abdominal wall, similarly as the transverse mesocolon does, but there were practically no vessels seen in this membrane. Under this peseudomesocolon you could see shining through a portion of small gut somewhat to the left of the mid-line. But it did not emerge. It was then clear that we had to deal with a non-torsion of the colon, and that we would not find the cecum and ascending colon on the right side (Fig. 8). This was readily ascertained. But where was the emerging jejunum? It was now seen that the duodenum at the lower half of its vertical portion was intimately glued to another gut. This latter could be dissected free from the descending duodenum, and proved to be the beginning of the jejunum. It was unusually muscular and large. Before using this gut for the gastro-enterostomy we had to get more information as to the remaining course of the intestine, because this very wide and muscular appearance of the jejunum might indicate some obstruction further down. Following it downward the upper jejunum appeared large and powerful, but after a stretch the gut became quite small, almost like a child's. The mesentery of this midportion of the small intestine was attached to the right of the vertebral column and this attachment reached rather far downward toward the right innominate line. Two fibrous bands ran downward from it and were fixed to the latero-posterior pelvic rim. Following the intestine further on, the mesenteric attachment was seen to run from this lowest point toward the left and upward. The intestine became again larger and finally the cecum with a long and thickened appendix was pulled into view from the area to the left of the navel. The appendix was removed

Fig. 8. Mr. V. A. P. Anatomic findings at operation; non-torsion of colon; jejunum not emerging at normal place.

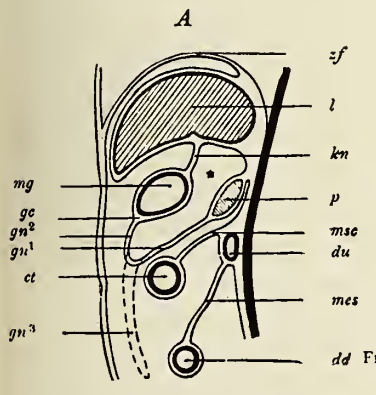

Fig. 9 (A). Development of peritoneal configuration (from Hertwig's Embryology); gn' is posterior lamella of greater omentum, before its fusion with mesocolon.

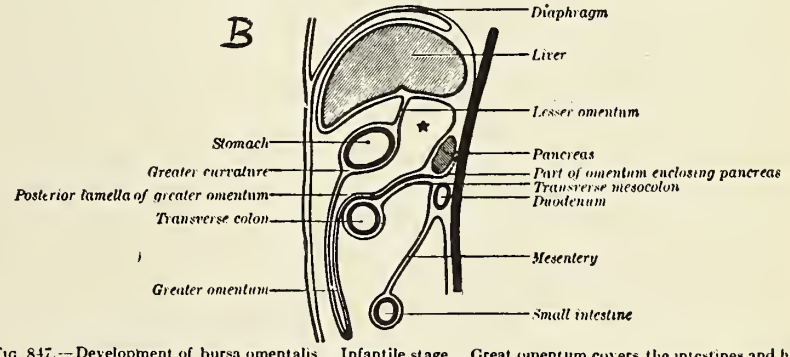

Fig. 847.—Development of bursa omentalis. Infantile stage. Great omentum covers the intestines and has fused with the transverse mesocolon. Pancreas is free from peritoneum posteriorly. (Hertwig.)

Fig. 10 (B). Same as Fig. 9, after fusion between omentum and transverse mesocolon.

and an anterior or better antero-inferior gastro-entertostomy was made. The post-operative course, though we had anticipated possible obstructive trouble from the hypoplastic midportion of the small intestine, was uneventful; the

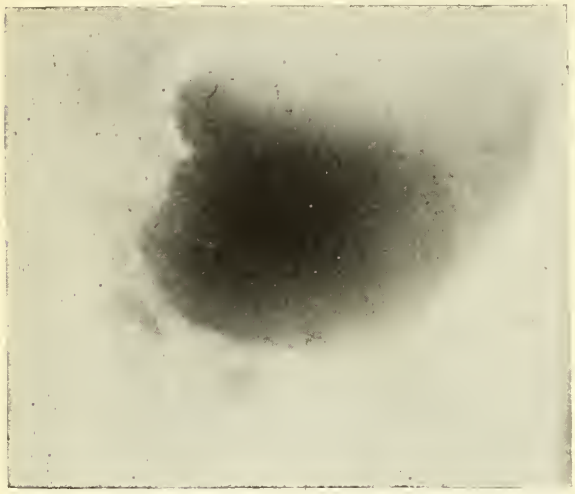

Fig. 11. Mr. W. R. Almost complete closure of pylorus and gastro-enterostomy opening.

patient being out of bed after four days. In a month he had regained his former weight.

What was the cause for the non-torsion? Was the hypoplastic mid-portion of the small intestine with its low mesenteric attachment a coördinate malformation or were the peritonitic threads at this point a part of a more generalized inflammatory condition? We had observed that from underneath the stomach near Treitz's fold, to which place we could follow the duodenum and from where it returned extraperitoneally to the right, some adhesive bands ran downward to the region of the left-sided cecum. Therefore one may venture the conception that early in embryonic life in or along the course of the vitelline vessels which in the first few weeks are most conspicuous and which later become the superior mesenteric vessels, an abnormal adhesive process or inflammatory cicatricial condition occurred. This would cause a certain degree of fixation between the end of the duodenum and the area of the cecum, and would counteract the rotary motion, back of which there cannot be much force.

I mentioned that from the under surface of the omentum the peritoneum ran back toward the posterior wall of the peritoneal cavity underneath the stomach (Fig. 9). The omentum was therefore between the two layers of peritoneum which come from the greater curvature of the stomach, from where it gets its blood supply. Its connection in the fully developed human with the transverse colon is only a secondary one

Fig. 12. Mr. W. R. Same as Fig. 11, taken a little later.

through an agglutination of its under surface with the peritoneal lining of the upper surface of the colon and its mesocolon (Fig. 10). The sketches from Hertwig's Embryology show this beautifully and explain the findings in our case, where the transverse colon was missing.

The next patient, Mr. W. R., forty-four years old, was operated upon on April 19, 1925. In 1908, which was seventeen years ago, a gastro-enterostomy had been performed. One and a half years later the same surgeon entered the abdomen again, because the patient complained bitterly of pain and vomiting. The patient was told that the former gastro-enterostomy opening was widened. A year after this on account of severe constant pain his abdomen was reopened. It appears that the patient nearly died on the operating table, and the surgeon, who is now dead, told our patient that on this account he could do nothing further. Since the first operation the patient needed morphine almost daily.

This man was brought into the hospital in a pitiable condition of pain, vomiting and emaciation. His weight was ninety-three and one-half pounds. The pain was practically constant, the vomiting daily, though he partook only of the lightest of diet and at times went hungry for a day. All these years he had frequently such bad times alternating with periods of less misery. This last spell existed for three months.

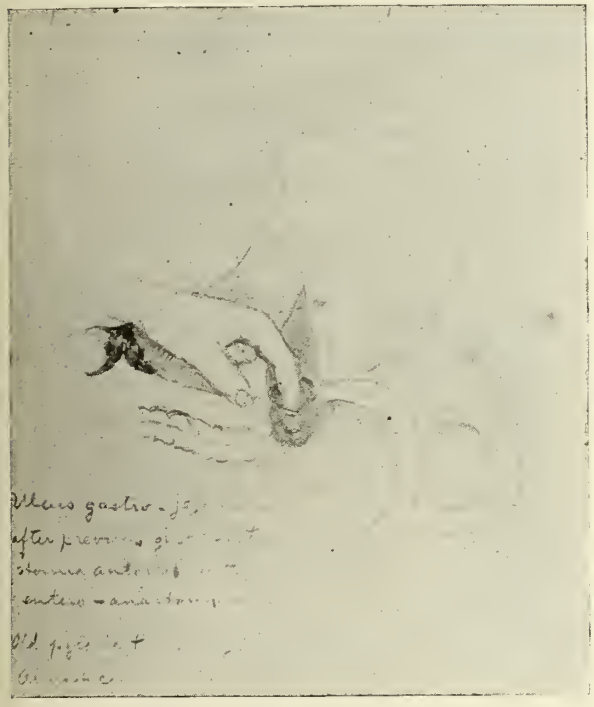

Fig. 13. Mr. W. R. Findings at operation (same case as Figs. 11 and 12).

The *x*-rays showed that, though the stomach was filled to its limits, hardly anything (Figs. 11, 12) passed through into the small gut. You could see a very faint trace after a while pass through the pylorus and at the site of the gastro-enterostomy a pocket would fill, but the contents remained there without further progress. The *x*-ray pictures had thus shown an almost complete obstruction as well of the pylorus as of the artificial stoma. The barium meal had caused great suffering and had to be removed by the stomach tube.

At the operation, the first half of which was done under local anesthesia, we had to divide numerous adhesions between omentum and abdominal walls. At the greater curvature of the stomach a mass of the size of a small hen's egg was found, and also a hard thickening at pylorus of irregular cicatricial appearance, presumably the old original ulcer. Much time had to be spent in trying to recognize the structures. The beginning of the jejunum, where it emerges from underneath the mesocolon, was identified (Fig. 13). It was followed downward and after a short course it ran into a Y-shaped portion with distinct marks of an old suture. One leg of this was clearly the efferent gut, while another, which was flatly adherent to the mesocolon, took its way upward to the greater curvature of the stomach. The thickening of the parts obliterated the anatomy to the extent that the relation with the transverse colon was only gradually and even then not entirely cleared. The condition of the patient precluded an extensive resection of the stomach and perhaps colon, as much as this seemed to be the desirable procedure, especially on account of the condition of the pylorus. However, the pyloric thickening was obviously by far the lesser trouble, at least what concerned the agonizing pain. That we had before us a gastro-jejunal ulcer seemed clear, though the small gut could not be followed as distinctly to it as my sketch makes it appear. An incision into the stomach had to help us out. With the finger in the cavity of the ulcer, which had a diameter of two cm. and a depth of 3 cm., we could dissect the walls of this cavity free from the adjoining tissues, hugging the ulcer very closely and constantly on the lookout for the colon which was part of this mass. A fine opening was then felt toward the left; this was undoubtedly the attached jejunum, greatly distorted and contracted. After this ulcerated sac had been freed on all sides and cut away from its union with the stomach, its communication with the small gut was also divided, and it was removed without injury to the colon. The whole irregular wound was then closed grasping the jejunal opening in the gastric suture. A new gastro-enterostomy away from this infected and thickened area was made farther to the left. The efferent loop, just beyond the old entero-anastomosis, was used for the new stoma. The patient made a better recovery than we had anticipated. To facilitate the emptying of the stomach we took him out of bed forty-eight hours after the operation. Though the pulse ranged between 128 and 156 during the first two days, it promptly dropped when more food was retained.

In this case, though the patient left the hospital sixteen days after the operation, in good condition, the outlook was uncertain, and indeed, last August he had a bad spell of vomiting, but after a short time he again "felt fine" according to the

Fig. 14. Suturing in gastro-enterostomy. Isoperistaltic position of jejunum. Toward the inlet loop the sutures are put in an oblique direction and grasping broader surfaces, thus pulling outlet loop toward middle of gastro-enterostomy opening and partially obstructing the afferent loop.

report. He now tells us that his weight is 118 pounds and that he has had no pain at all since the operation. His only complaint is that he is weak. He eats everything and does not have to be particular about his food.

In this as well as in the foregoing case you noticed that an anterior gastro-enterostomy had to be performed and that in neither case an entero-anastomosis was added. I consider this entirely unnecessary if certain precautions are taken when making the gastro-enterostomy (Fig. 14). If the afferent loop is approaching the stoma from above, which means from the lesser curvature side, if furthermore this afferent gut is somewhat constricted by the suture and if it is fastened to the stomach for some distance beyond the stoma, then the gastric content has no tendency to flow into the upper loop, and in case there should be a distention of the upper loop by a filling of it from the direction of the duodenum, the bulging of this afferent loop, which in cases of vicious circle was often found to compress the efferent opening, is far enough distant not to interfere with the patency of the lower opening. Even in a very recent work on surgery of the stomach I read that in anterior gastro-enterostomy and entero-anastomosis must always be added. I am sure that this is completely avoided by our mentioned procedure, which is more easily demonstrated than described. The inlet loop comes from the lesser curvature side whether the opening be made vertical or oblique; it is fastened to the stomach for about 2 cm. beyond

Fig. 15. Gastro-enterostomy suture finished; outlet runs freely away from the stomach.

the opening by the serosa suture of the gastro-enterostomy; and by grasping broader surfaces the inlet gut is somewhat compressed and twisted on its axis (Fig. 15). In the meantime this serosa suture is placed in a manner to make the lower loop run, not like a tangent, but more directly away from the stomach. This is accomplished by putting the stitches in the upper half of the stoma in an oblique way, pulling the gut upward on the gastric wall. The procedure was published in the April 1919 number of Surgery, Gynecology and Obstetrics.

We have not seen a vicious circle occur, since this procedure has been carefully adhered to. When vicious circle develops, lavage of the stomach must first be tried, but one should not wait long before a high jejunostomy is added in order to administer food. In 1908 I devised a gastrostomy with insertion of a catheter from the gastrostomy wound through the gastro-enterostomy opening down into the jejunum for a good distance (Fig. 16). This allows of immediate feeding, and the catheter tends to keep the gastro-enterostomy outlet into the afferent loop patent. In the meantime the afferent gut may be narrowed by a suture. In this respect the procedure is superior to the jejunostomy and, after an anterior gastro-enterostomy, almost as simple. It is better to insert the catheter even farther than shown in the sketch, which is taken from

an article of mine on "Transgastric Jejunal Feeding" (Annals of Surgery 1910).

Carcinoma of the stomach. Are there results worthwhile in surgery for gastric carcinoma? Are they of long enough duration to be called

Fig. 16. Transgastric jejunal feeding in case of vicious circle.

real cures? At first one spoke of three-year cures, then the space of time proved to be too short and five years of freedom from recurrence was demanded. Still, some carcinomata have a very slow course and a case might thus be considered a surgical result without really being cured. I have personally had a patient live three years and nine months after a simple gastroenterostomy in an inoperable carcinoma of the stomach. But in this case, as in practically all long lasting cures reported after simple gastroenterostomy, the proof through a microscopic study of a removed gland or by autopsy later on was lacking, and the objection, that it may have been a hypertrophic ulcer, is justified. Thus the eight-year limit is now considered as decisive.

We all agree that early recognition of the disease is of the greatest importance, and therefore the results of operations of to-day ought to be considerably better than ten and twenty years ago, because the medical profession has learned to recognize the cases much quicker and understands the enormous importance of this promptness.

In my experience I have had six instances of cures lasting more than eight years. However,

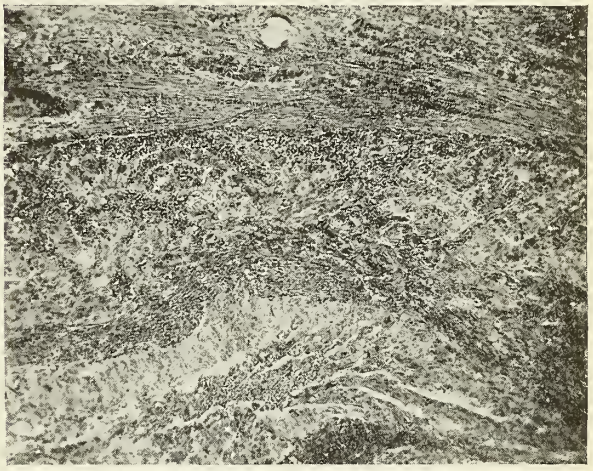

Fig. 17. Mr. F. L. V. Carcinoma of stomach, partly adeno type, partly carcinoma solidum.

three of these are unfortunately not to be proven by the removed specimens or microscopic sections, as they seem lost, and they will not be further considered.

The three patients you see sitting here have had their operations for carcinoma of the stomach more than ten years ago. Dr. Bell, professor of Pathology at the University of Minnesota and head of the pathological department, had the kindness to examine the microscopic slides and to verify the diagnosis in all three cases.

Case 1.—Mr. F. L. V. of St. Peter, Minn., was operated upon Sept. 27, 1915. The carcinoma involved half of the posterior wall of the pyloric area and two-thirds of the lesser curvature. The mass at first could not be lifted out on account of adhesions to the under surface of the liver. A small piece of liver tissue and also of the pancreas had to be taken away together with the pyloric half of the stomach. There was one large lymph gland in the pyloro-duodeno-pancreatic angle, but otherwise the glands were not affected. The microscopic picture is partly of the adeno type, partly a carcinoma solidum (Fig. 17). This patient wrote me last November: "I have been feeling fine. Appetite is good and I sleep well. I eat three meals a day and never lunch. I use tobacco, chew and smoke. I have never taken any medicine since the operation. I take plenty of exercise; have a garden in the summer and make my own wood in the winter, and do quite a bit of walking. My weight at present is 145 pounds and I was seventy years old the eleventh of Sept., 1925." He

was so busy just now with his garden work that at first he did not want to come here. As you see, the patient looks all he claims for himself. He has now been well for ten years and eight months since his operation.

is now well for eleven years and one month. The microscopic picture is that of the solid type (Figs. 18, 19).

Case 3.—Mr. H. S. was sixty years old at the time of his operation, which was on Feb. 24, 1905. The

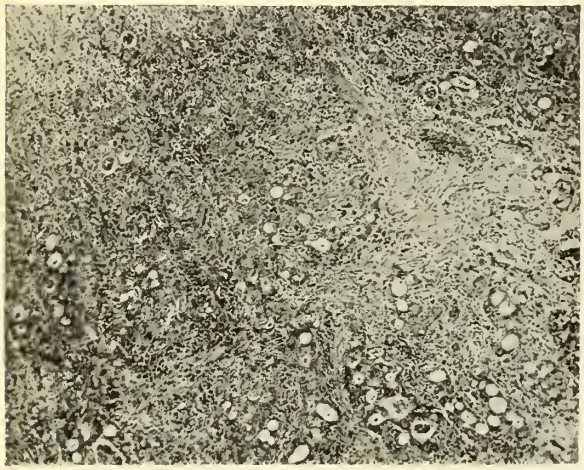

Fig. 18. Mr. J. B. Carcinoma solidum; low power.

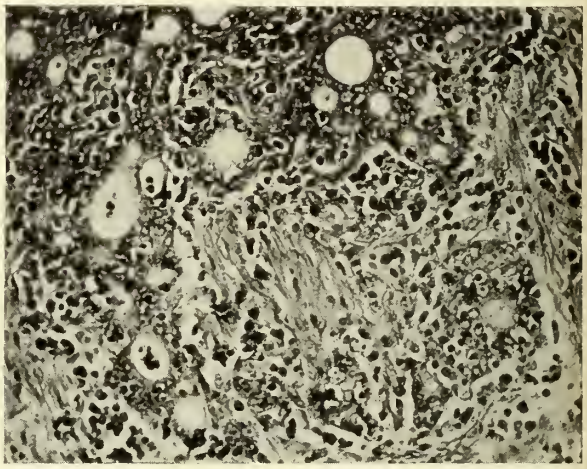

Fig. 19. Carcinoma solidum, high power (same as Fig. 18).

Fig. 20. Mr. H. S. Carcinoma of glandular type.

Fig. 21. Mr. H. S. Same case as Fig. 20; another section.

Case 2.—Mr. J. B. of St. Paul was sixty-six years old at the time of his operation. He had an ulcerated carcinoma of the posterior wall near the pylorus. The operation was in April, 1915. The symptoms had dated back for three years. For one year he had suffered from severe pain and vomiting. The line of resection did not leave as large a margin of healthy looking mucosa as we like to see. Nevertheless, this man, now seventy-seven years old, looks remarkably well for his years, as you can see for yourselves. He is in a good state of nutrition, and he tells me he has no complaint, no pain. He eats meat, sausage, bread and vegetables, but avoids fats and pastry. He walks a great deal. He

specimen, a carcinoma of the glandular type (Figs. 20, 21), partly ulcerated, was the size of a fist, and was on the posterior wall near the pylorus. It was given to the pathological collection of the University of Minnesota, and Dr. Bell kindly let me have it for today's demonstration. As you can see from the specimen, the resection was quite far from the edge of the tumor (Figs. 22, 23). Microscopic examination showed that for quite a distance (about 2 cm.) beyond the macroscopic edge of the tumor there was a marked change in the glands of the mucosa, which had become of much larger size and had densely invaded the submucosa. From the study of this margin we had

the impression that the lucky outcome in this case was at least partly due to the wide clearance.

The patient, as you see him here, is eighty-one years old. Though he weighs only 110 pounds, always having been rather thin, he says he is well. He worked

Fig. 22. Mr. H. S. Removed portion of stomach.

until a few years ago. He eats anything that comes on the family table, and has no pain though the remainder of his stomach, as the *x*-ray picture shows, is quite small (Fig. 24). His cure now has lasted twenty-one years and three months.

I was anxious to show these three patients to you, because one has to contend right along with the most outspoken pessimism as soon as the diagnosis of carcinoma of the stomach is made. With the cancer campaign for education of the public the resistance to operation has greatly diminished and thus the number of operable cases ought to increase in a great measure. The public is not far from recognizing pretty generally that treatment of any protracted gastric disturbance without competent roentgenologic examination is nothing less than malpractice. The *x*-ray examination is of enormous value for the early recognition of carcinoma of the stomach and represents the deciding argument. Like everywhere in the body the greatest improvement in our results in carcinoma is to be expected from early recognition. This applies to each individual case.

But are there features besides the early recognition which tell the surgeon that a case has particularly good chances from resection of the stomach? Microscopic examination of the growth might give us a clue; but our cases speak against this. In one of these three cases the solid type of carcinoma was found, in another the glandular type and in the third one a mixture of areas of glandular and of solid carcinoma.

However, macroscopic features which at once encouraged a far-going attempt at removal of

Fig. 23. Mr. H. S. Same case as Fig. 22; another view.

Fig. 24. Mr. H. S. X-ray picture of stomach, taken twenty-one years and three months after resection for carcinoma.

the affected area, were present in each case. And this feature was the complete or almost complete absence of glandular involvement. This

feature is of utmost importance, and its value is enhanced by the ease of establishing its presence or absence. In our three cases there was only in one a glandular involvement found and this was only one gland, a large one, in the pyloro-duodenal angle. Though the tumor had grown to the liver in front and was rather broadly adherent to the pancreas behind, we decided upon excision. This case was surely not an early one. The gland, which was practically in continuity with the tumor, had become quite large and still there was no further glandular involvement. The tumor therefore grew by continuity and contiguity but had very little tendency to spread through the lymph channels.

The observation made by a pathologist that from 20 to 25 per cent of all cases of gastric carcinomata, that died unoperated, had no glandular involvement and metastases, is of fundamental importance. These cases died therefore in consequence of a purely local growth. Much more than microscopic study it is therefore the simple macroscopic inspection which gives us the information needed. This information will not keep us from resecting the cases with glandular involvement, if the case is reasonably operable, but it will be of greatest importance in formulating the prognosis.

These cases of cures lasting respectively ten years and eight months, eleven years and one month, and finally twenty-one years and three months, were observed in the material of a quite moderate private practice. The well looking patients as you see them before you, with their respective ages of seventy, seventy-seven and eighty-one years, demonstrate that an extensive resection of the stomach does not mean the life of an invalid afterward, and they further emphasize the important fact that the diagnosis of carcinoma of the stomach does not at all signify an *eo ipso* hopeless condition.

Addendum. On the day of reading this paper the three men were taken to St. Joseph's hospital to be photographed. They made the occasion one for a celebration and tried to beat each other in jokes and caprioles. Two of them staged a little wrestling match for the benefit of the sisters and nurses present.

At the time of publication of this paper all three men are still in excellent condition, which adds seven months to the above stated length of time of freedom from signs of recurrence.

ENDOMETRIOMA INVOLVING THE RECTUM*

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Tumors containing typical endometrial tissue frequently invade the wall of the rectum or sigmoid colon. It would be expected that, with extensive involvement of the lower bowel, menstruation or bleeding per rectum would be a fairly common symptom of this condition. Reviewing the literature with this complication in mind it was found that only three cases have been reported in which rectal bleeding had occurred. Cullen[1] in 1917 reported two cases and Lochrane[2] in 1922 added the third. A brief abstract of these cases follows.

Cullen: Case 6. C. H. I. 15496. Mrs. J. S., aged 43, first seen on Sept. 19, 1916. Complaint: For the last eighteen years, since the birth of a child, the periods have been irregular and painful, the pain becoming progressively worse. The periods were also prolonged, lasting from five to fifteen days. On examination the uterus was found to be enlarged about one and one-half times normal size and posterior to the cervix was found a "puckered and thickened area apparently not over 1 cm. in diameter." Diagnosis of adenomyoma of the rectovaginal septum was made and operation was performed on the following day. Curettage and frozen sections revealed hyperplasia of the endometrium. Complete hysterectomy with removal of the suspected area of thickened rectovaginal septum was done, leaving the appendages in place.

Pathological report was typical adenomyoma of the rectovaginal septum. Convalescence was uneventful. Subsequent to discharge the patient had periodic hemorrhages from the rectum, the first being about a month after discharge; then again about Christmas 1916 lasting several days; March 1917 bleeding for four days; April 1917 and July 1917 bleeding had occurred for four days. Proctoscopic examination revealed no cause for hemorrhage and the conclusion was that the bleeding came from higher up in the bowel.

Although it is not clear in this case that the bleeding was due to adenomyoma, the periodicity of the bleeding is suggestive that the hemorrhage was likely due to ovarian stimulation of misplaced endometrium.

Cullen: Case 8. Mrs. L. D. K., aged 37. In August, 1907, ten years prior to the present admission, Dr. Cullen had removed a myoma from her uterus during pregnancy. Pregnancy was not interrupted. In 1915 a supravaginal hysterectomy had been done by another surgeon and both tubes and the left ovary were removed with a myomatous uterus. Following this operation menstruation continued, dysmenorrhea became progressively worse and intermenstrual bleeding ap-

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peared. Sometimes the beeding came from the vagina and sometimes from the rectum. For the last year before the present admission she had menstruated more frequently by rectum than by vagina. Dr. Cullen operated again on May 26, 1917, removing the cervical stump and a large adenomyomatous mass of tissue which had invaded the rectal wall, including in the tissue removed the anterior wall of the rectum. Microscopic study of the tissue showed it to be an adenomyoma, the endometrial glands of which had invaded the rectal wall nearly to the mucosa; the latter seemed to be intact.

Lochrane's case: Nullipara, aged 33, pregnant at the time about eighteen to twenty weeks. About one year prior to pregnancy had been told that she had a tumor in the rectum about the size of a bean. It had been called a polypus. Menstruation had always been normal and painless. At the time of examination a multilobulated non-tender mass was found in the posterior vaginal wall in the posterior fornix near the midline. It appeared to be about three quarters of an inch vertically by one inch antero-posteriorly in diameter and could be felt as a somewhat cystic mass bulging into the rectum. On one occasion about a year previously the bowels had felt obstructed and she had had bleeding from the bowel twice. The relation of this bleeding to menstrual period is not stated. A portion of the growth was removed and proved to be an adenomyoma in which the endometrium had a decidual reaction.

The following case is reported because of the rarity of rectal hemorrhage definitely associated with menstruation and also because of the method of treatment and the definite proof thereby obtained of the need for removal of the ovaries in this class of case.

Li Yen Shi, P. U. M. C. 9866, was admitted to the hospital on Jan. 13, 1925, with the following history: Aged 42, married for fifteen years, never pregnant, her menses began at sixteen years, were of a regular twenty-eight day type of three or four days duration, flow quite profuse, and only moderate pain. Ten years ago she began to have more severe pain in the lower abdomen and back and as the pain increased in severity she has had to go to bed and has taken up opium smoking, though she uses only a small amount. With the beginning of the severe dysmenorrhea the periods became irregular and the flow has been less than formerly.

She has noticed a mass in the lower abdomen for several years, though it evidently has not increased rapidly in size. During the last ten years she has had periods of hemorrhage from the rectum accompanying the menstrual periods; she sometimes has a menstrual period that is not accompanied by rectal hemorrhage, but the rectal bleeding, which comes every two or three months, always comes at the menstrual period and usually lasts a few days longer than the period with discharge of blood and mucus. She also has rectal tenesmus.

Physical examination: She had a small adenoma of the thyroid gland; otherwise except for the pelvic condition the findings were negative. An irregular mass was palpable in the lower abdomen. There was a hard nodule to the left and a round mass to the right much softer in consistency extending about 8 cm. above the symphysis. This mass on the right gave the impression of being filled with fluid. On bimanual examination the uterus could not be outlined definitely nor distinguished from the pelvic masses. The pelvic organs were fixed and immovable. No involvement of the rectal mucosa could be made out on digital examination and there were no hemorrhoids to account for the bleeding.

Operation was performed on Jan. 15, 1925, Dr. Marion Yang assisting me. Immediately on opening the abdomen and exposing the pelvic organs a most interesting picture presented itself. The right ovary was greatly distended and was composed of a number of cysts filled with dark brown material, the largest of the cysts being oval, thin walled and about 5 by 8 cm. in diameter. Some of the cysts had thick walls. The left ovary was smaller but was also cystic and the cysts were of the same character. Both tubes were patent and in the middle of the right tube was a spindle shaped thickening. The uterus was also enlarged and the walls were firm, the uterus being 12 by 8 cm. in diameter. The cysts were lying in the space between the uterus and the sigmoid colon and were very densely adherent to both structures. In the process of separation from the sigmoid the thin walled cysts were ruptured and viscous tarry material exuded. As we proceeded with the separation we soon realized that in order to completely remove the growth we should be forced to resect the sigmoid or leave portions of the tumor in the pelvis. We chose the latter course and separated as far as possible and then purposely cut through the cyst and left a portion of the thin posterior wall attached to the bowel and proceeded to remove both tubes, both ovaries and the uterus at the supra-vaginal junction.

Convalescence was uneventful except for a sudden and unexpected rise of temperature on the tenth day. She was discharged on the 21st day. Subsequent to discharge she returned on April 21, 1925, for post-operative examination. She reported that her condition was much improved, she had had no bleeding and had gained strength but was troubled slightly by the usual menopausal symptoms. On March 30, 1926, fourteen months after operation, she returned by request and stated that she had no complaints, was able to do her usual work, had no pain and no bleeding.

Pathological report of specimen. Surgical Path. number 6807. The specimen consists of the uterus, amputated supravaginally, and the adnexæ.

The uterus, after fixation in formalin, measures 11 by 8.5 by 6 cm., the cavity is 9.5 cm. in length. The uterine wall is thickened, on the right measuring 1.6 cm. and on the left 5 cm. The endometrium is not thickened. On cut section of the thick left wall the uterine muscle is dotted with small brownish spots which are numerous near the peritoneal surface. The tubes are patent and are adherent to the cystic masses that are attached to the posterior surface of the uterus.

These cystic masses, most of which are collapsed, apparently arose from the ovaries. The walls of these cysts vary in thickness from 1 mm. to about 1 cm. The cavities of the cysts are lined by rough tissue and fibrin and some contain tarry blood. The cyst that represents the right ovary is about 8 cm. in diameter and on the left side is a thick, fibrous walled cyst, the left ovary, 7 cm. in diameter. Both ovarian cysts are attached to the uterus by firm fibrous adhesions.

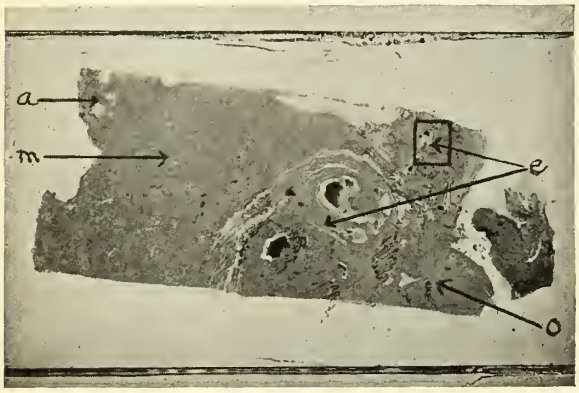

Fig. 1. Photomicrograph 2.5 x of a section through the left wall of the uterus. At "a" a few dilated endometrial glands invading the myometrium, "m" is normal myometrium, "e" is endometrioma invading the uterine wall and forming adhesions between the uterine wall and the ovary "o".

Microscopic examination: The endometrium is in the early stage of premenstrual hypertrophy. A few endometrial glands extend for a short distance into the myometrium. These glands are dilated and present the picture of an adenomyoma. There is then a zone of normal myometrium varying from 1 to 1.5 cm. in thickness with no evidence of invasion by endometrial glands. Byond this normal myometrium is another zone of muscle and fibrous tissue, to which the ovaries are attached, in which numerous endometrial glands are found. Serial sections of the specimen were not cut, but in all twenty-four blocks of tissue were studied of which twelve included the uterine wall. In none of these is any connection seen between the adenomyoma originating near the uterine cavity and the endometrioma originating from the peritoneal surface of the uterus (Figs. 1 and 2). The ovaries are transformed into cystic structures and are adherent to the posterior surface of the uterus by dense fibrous tissue in which

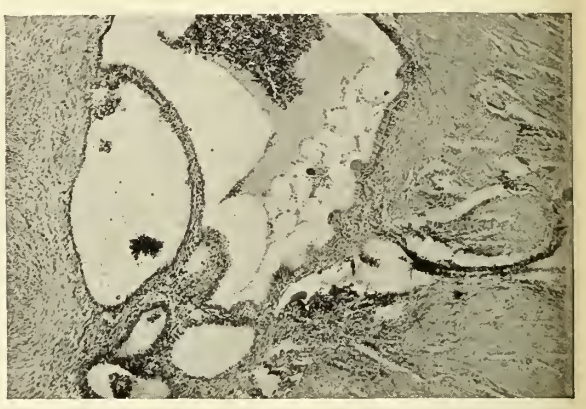

Fig. 2. Photomicrograph 50 x of the square indicated in Figure 1. Typical endometrial glands.

endometrial glands are numerous. The ovarian cysts are partially lined by tall columnar epithelium. Desquamated islands of this epithelium are seen in crypts of the ovarian cysts and resemble curettings from the uterine cavity (Fig. 3). Figure 4 represents a section of ovary through one of the crypts in which the columnar epithelium and the endometrial stroma are intact. Figure 5 is a section showing typical endometrial glands in fibrous connective tissue from an adhesion between the posterior surface of the uterus and the sigmoid colon.

There are three important findings: (1) the early adenomyoma of the uterine wall springing from the endometrium of the uterine cavity; (2) the presence of an invading tumor composed of endometrial tissue involving the posterior surface of the uterus and the fibrous adhesions between the uterus, ovaries and sigmoid colon; and (3) the cysts in the ovaries lined by uterine epithelium and stroma. Pathological diagnosis—

Fig. 3. Photomicrograph 50 x showing one of the crypts in the ovarian cyst containing desquamated uterine epithelium.

Fig. 4. Photomicrograph 50 x showing one of the crypts in the ovarian cyst in which the endometrial lining is intact.

adenomyoma of the uterus, extra-uterine endometrioma (Sampson type) involving the posterior surface of the uterus, the ovaries and the sigmoid colon.

Mention of extra-uterine endometrioma involving the uterus secondarily was made by Sampson[3] in 1925.

That these endometriomas with extensive involvement of the rectum so rarely perforate that organ with resultant bleeding per bowel is probably due to two factors. .In the first place these tumors give rise to such severe subjective symptoms that the patients usually seek medical relief early in the course of the disease. In the second place it is quite evident that normal epithelium offers an effective barrier to the invading epithelium. This is illustrated in Cullen's numerous cases in which he has excised portions of the

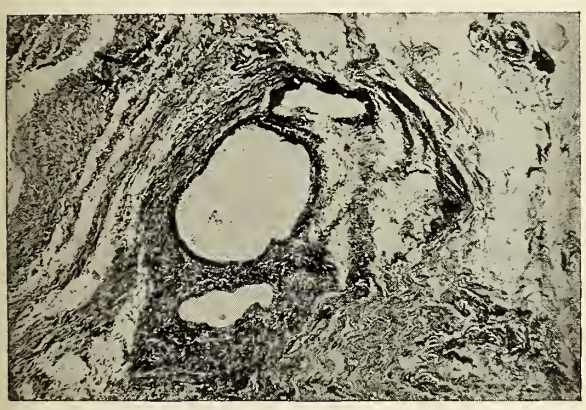

Fig. 5. Photomicrograph 50 x showing endometrial glands in fibrous adhesions between uterus and sigmoid.

anterior rectal wall with the adeno-myoma and has found, on microscopic study, that the invading endometrium stops abruptly at the basal layers of the rectal mucosa, though it has invaded the muscular wall of the intestine most extensively and may even have penetrated the submucosa. The same fact is observed in those tumors which have invaded other epithelial lined viscera. In the case of the bladder three endometriomas have been reported by Brady[4] (1925) and Keene[5] (1925) only one of which gave rise to hematuria. Penetration of the rectal or bladder epithelium apparently occurs in case the invading endometrial glands meet with sufficient resistance in the underlying tissue to form cysts which rupture into the cavity of the invaded viscus. Following the rupture of the endometrial cyst there is evidently healing of the normal epithelium and hemorrhage accompanying the menstrual period may be absent for some time until the blood has re-accumulated in the cyst. This explains the irregularity of the abnormal bleeding. Traumatic rupture with bleeding by bowel between periods may occur due to passage or accumulation of hard, dry fecal masses. These patients uniformly complain of an obstinate constipation.

The subject of treatment will be discussed in connection with the second case.

Case 2. P. U. M. C. 8418. Miss R. M., single, American, aged 34, was admitted to the hospital on July 11, 1924, with the following history:

Chief Complaint.—Dysmenorrhea which had commenced and had been increasing in severity for the last year; pain on defecation and constipation. Her past history was essentially negative. Menstruation began at the age of seventeen, has been the regular 28-30 day type, in 6-7 days duration, and prior to the onset of the present illness a year ago she had had pain only on the first day or two. Beginning about a year ago the pain has lasted throughout the duration of the flow and has been increasing in severity. She is tired, run down and has no energy for her work. Physical examination was negative except that by rectal examination the uterus was found to be moderately enlarged, retroverted and tender to palpation, the cervix being high and anterior. No tumor masses were made out. Diagnosis was made of dysmenorrhea due to retroversion of the uterus and a suspension operation was advised.

Operation.—July 12, 1924. Dr. S. T. Kwan acted as my assistant. On opening the abdomen and exposing the pelvic organs it was found that the uterus was retroverted and bound to the sigmoid by a soft hemorrhagic mass of tissue which filled the cul-de-sac. There was a small parovarian cyst in the right broad ligament. The tissue in the cul-de-sac was readily separated from the sigmoid but because of the friability of the tissue it could not be completely removed, and it was now recognized that we were dealing with an endometrioma. Supra-vaginal hysterectomy was performed and the tubes and ovaries were left in place. The parovarian cyst was removed. We debated the advisability of removing the ovaries with the uterus but as we had not mentioned the possibility of such a procedure before operation and the patient was expecting only a suspension operation we decided to leave the ovaries. At the time we mentioned that if she had further trouble we would use radium. Convalescence was uninterrupted except that she had an attack of pain in the kidney region three days before discharge. She left the hospital on Aug. 2, 1924.

Pathological Report.—The specimen consists of a small thin walled cyst measuring 2.5 cm. in diameter and the uterus removed at the supra-vaginal junction measuring 9 by 5 by 4 cms. On the posterior surface of the uterus there is a soft, red friable growth extending two-thirds of the distance to the fundus. The uterine muscle is thick but normal in appearance. On sectioning the growth on the posterior surface of the uterus, small cysts with brownish contents are seen.

Microscopic examination: The endometrium presents the picture of a moderate hyperplasia. The uterine muscle is thick but otherwise normal; there is no sign of invasion by endometrial glands. On the posterior surface of the uterus there is a mass of tissue composed of hemorrhagic areas, newly forming connective tissue and interpersed through this tissue are seen numerous glands composed of typical endometrial tissue. Some of these glands are small while others are dilated and cyst-like (Figs. 6 and 7). The sections of the cyst show it to be of parovarian origin. Diagnosis—Parovarian cyst. Endometrioma involving the posterior surface of the uterus and the sigmoid.

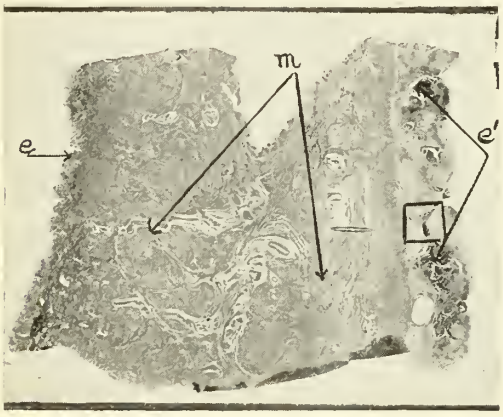

Fig. 6. Photomicrograph 2.5 x showing uterine wall with hyperplastic endometrium at "e", thick muscle wall but with no invading uterine glands at "m", and the endometrioma composed of new connective tissue, hemorrhage and endometrial glands at "e".

Subsequent History.—The patient went to a summer resort to recuperate with instructions to return if any untoward symptoms appeared. One week after discharge she began to have pain in the urethral and bladder region with marked frequency of urination. She returned to the hospital on August 26th. Cystoscopy was done and a normal bladder and ureteral orifices were found. On pelvic examination there was very marked tenderness in the vaginal vault and rectum and on the right side there was an indurated tender mass. It was thought that the pain and mass were due to growth of the tumor since operation, and radium was advised. On Aug. 30, 1924, 90 mg. of radium screened with 1.5 mm. of silver and 2 mm. of rubber were placed in the vagina against the cervix and the vagina was packed with gauze. A total of 2205 mg.-hours were given. Bladder symptoms disappeared rapidly with no local treatment and the abdominal pain became less. On September 12th she had an attack of pain which was only moderate and lasted a short time, and on the 17th she complained of tenderness in the rectum. From that time until discharge on September 21st she was free from pain and up and around as desired. In reply to a postoperative questionnaire sent out on April 24, 1925, seven months after treatment with radium, she stated that she was doing full work though it tired her, but she felt that she was steadily gaining in strength. She occasionally had pain in the pelvis which appeared after violent exercise, though not frequently. Menopausal symptoms had given her trouble for a few months but were rare at the time of writing. Rectal symptoms had disappeared.

Fig. 7. Photomicrograph 50 x showing two small endometrial glands and one large cyst-like space lined by columnar epithelium, taken from the area indicated in Figure 6.

Opinion as to the treatment of adeno-myomata or endometriomata extensively involving other organs has undergone a very decided change in recent years. Graves[6] (1925) states: "I may say that from what I have learned from experience and a study of cases in the literature, I cannot subscribe to the sweeping statement that ectopic endometriomata do not retrograde after removal of the ovaries; nor are we justified in making general statement to the contrary. But I am convinced that in the majority of cases the endometriomata may be counted on to atrophy in the absence of ovarian function and that this probability in their behavior is a valuable guide to treatment in cases like those of rectovaginal adenomyomata in which a radical operation would greatly mutilate the patient or seriously endanger her life." Cullen[7] agrees with this view. The two cases presented are additional evidence of the effect of oöphorectomy on endometriomatous tumors. It apparently makes little difference whether the interruption of ovarian function is secured by surgical removal or by radium inactivation.

Recurrence of symptoms has been cited in two of the cases previously quoted and this is due without doubt to the fact that one or both ovaries had been left in place after removal of the adenomyomatous uterus. Recurrence of symptoms occurred in one of the cases here presented. Unquestionably the best treatment is to remove

both ovaries at the time of the original operation if it is possible, but with the well known effectiveness of radium on the ovaries good results may be obtained in those cases in which it is impossible or unwise to remove the ovaries. Extensive resections of the bowel can be avoided in most cases if the true nature of the growth is recognized and the ovaries are removed or radiated.

From my study of the literature and from my own experience I would draw the conclusion that in dealing with adenomyomata that have penetrated beyond the uterine tissue and in ectopic endometriomata with numerous adhesions to adjacent organs in which it is impossible or inadvisable to remove the entire new growth, the removal of all ovarian tissue is the *sine qua non* of successful treatment.

215 Hamm Building.

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PHYSICAL THERAPY

The Council on Physical Therapy of the American Medical Association is now ready to consider devices for physical therapy. The consideration of apparatus will be governed by Official Rules, designed to protect the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with apparatus and methods for physical therapy. Devices and methods that have been found acceptable as conforming to the rules will be described in an Accepted List. (Jour. A. M. A., Dec. 11, 1926, p. 1999.)

ACUTE INTESTINAL OBSTRUCTION*

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The subject of intestinal obstruction has received a great amount of attention in medical literature during the past fifteen years. The morbid physiology and chemistry has been studied by many research workers, notably by Whipple and his associates and by Hartwell and Hoguet. Statistical data from groups of cases have been reported from several large clinics, by Richardson, C. H. Mayo and others.

Despite the experimental and clinical study that acute intestinal obstruction has received, the fact must be admitted that while there has been some reduction in the mortality rate due to the advancement of surgical knowledge, yet it is still far too high. The purpose of this paper is to bring up for discussion the problems of this condition as they occur in private practice and to urge early diagnosis and treatment.

This paper is primarily a short discussion of the etiology and diagnosis of acute intestinal obstruction. This will not include subacute forms or those due to malignancy.

Acute intestinal obstruction is one of the gravest conditions which the physician encounters. The responsibility for the life of the patient rests with the attendant who first sees the case. Often this attendant is in general practice, some distance from a hospital and a surgical consultant. Many lives are lost through delay in intervention, as the condition when not relieved results inevitably in death. The prognosis depends entirely on the promptness with which the patient is brought to the attention of the surgeon. Some responsibility, too, lies with the patient, who, too often, delays calling a physician.

Relief is not possible in all cases even when they are seen early, as some types carry a very high mortality, for example mesenteric thrombosis or embolism.

The mortality ranges from 30 to 60 per cent, depending on the type of case and time of operation. It appears that this mortality rate is pretty constant whether treated in the large groups in the general hospitals or by individuals in private practice. The Massachusetts General, Johns

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Hopkins, Union Memorial and the Maryland University hospitals all report about the same high rate. George Albert Moore reports a series of cases. Those operated upon within twenty-four hours all recovered. Those operated upon during the second twenty-four hours had an operative mortality rate of 25 per cent. During the third twenty-four hour period 33 per cent, and after the third day a mortality of 65 per cent.

Obstruction may be brought about by conditions within the lumen of the bowel; polyps, impacted gallstone, fecal impaction, coprolith, masses of worms, etc. A polyp or other pedunculated growth may bring about sudden obstruction or intussusception. Fecal impaction is a very real clinical entity, especially in the old. Symptoms of impaction may at times be very fulminating in character. They occur most often at the cecum or at the sigmoid. Many of the patients are in the cancer age and the question arises whether the condition is one of sudden flare up in carcinoma of the bowel. The non-malignant cases clear up with medical care and the type of obstruction may be determined early. The patient may give a history of prolonged constipation. The general condition may or may not be good, but the cachexia of advanced cancer is not present.

An injury to the neuromuscular mechanism of the bowel, as in acute peritonitis or mesenteric thrombosis, will bring about definite signs of obstruction. Another group of cases of apparent obstruction, really intestinal stasis, will accompany acute diseases, notably renal.

Extrinsic causes of obstruction include the different types of strangulated hernias, true volvulus, bands from fetal remnants, adhesions, pressure from tumor or other mass, acute inflammatory conditions, etc. Obvious hernias are not responsible for as large proportion of acute obstructions as formerly. They are taken care of earlier, as the public is educated to the point of view that it is safer to have the ordinary hernia repaired. The condition of strangulation of hernial contents is one where even the patient is aware that a grave condition exists and a higher proportion of these cases is seen early with a low mortality. However, we still have too many strangulated hernias which have been neglected until a damaged bowel results. Ill advised and prolonged attempts at reduction may result in harm either from reduction en bloc or from trauma to the intestinal wall.

No age is exempt from acute obstruction. That occurring in the newborn is usually due to congenital malformations or failure of development of a portion of the intestinal tract. The older infants are subject to the same causes as the adult. The older adult will present a multiplicity of possible causes. My cases have ranged in age from four and one-half months to seventy-six years.

The history of the case may be of value in arriving at a diagnosis. History of previous operations, more particularly when drainage has been instituted, is important. Digestive disturbance over a period of time, colics, cachexia, constipation, previous diseases, all have a bearing on the case.

Volvulus is an example of the fulminating type of intra-abdominal obstruction which offers a very short margin of time and which produces early tissue death with early absorption of toxins from retained intestinal content. Various types of internal hernia under bands or through congenital or unnatural mesenteric openings or through a diaphragmatic hiatus, may exist and later show acute symptoms. Post-operative adhesions, intussusception, and adherent Meckel's diverticulum, also add to the number of cases.

Post-operative obstruction deserves special mention. The attending surgeon is not always at fault and cases occur after the most careful technic. The mortality here is also high. These post-operative cases may be divided into two groups: (1) those occuring a few days or weeks after laparotomy and (2) those occurring months or years later. These cases may occur under the eye of the surgeon while the patient is still in the hospital. The outcome in such cases should be favorable provided the condition is recognized early. Both types are due to the mechanical action of adhesions or occasionally in the early cases to the pressure of a pus pocket or a hematoma. Some of the very early cases may be due to local exudate, the bulk of which may obstruct one or more loops of bowel. The later cases are due to definite bands with beginning connective tissue formation in the exudate. These early bands may be separated by the slightest touch. The very late cases are the end-results of connective tissue change and can be separated only by cutting. The symptoms are those of obstruc-

tion from any cause and are not always clear cut. A differential diagnosis must be made in each case from post-operative dilatation of the stomach, ileus from infection, mesenteric thrombosis and acute pancreatitis. Acute peritonitis will resemble acute mechanical obstruction and vice versa. The symptoms may vary from hour to hour and terminal symptoms are the same for both conditions.

Intussusception as a cause of obstruction is rather in a class by itself. My personal experience with this class has been limited to five cases. All were under one year, all were breast fed, and all were healthy looking babies. Their past history was negative except in one where excessive doses of cathartics had been given over a long period of time. Three cases were from this immediate vicinity and two from out of town. Three were operated on within twelve hours, one after about thirty hours, and one after forty-eight hours. All but this last were easily reduced. In this patient resection had to be resorted to and an enterostomy tube left in situ. All recovered except the neglected infant, who died about twelve hours later. Death results in most cases of resection.

Intussusception is the cause of obstruction in from one-third to one-half of all cases in the very young. There are four types, the ileo-cecal being the most common. This was the only type seen by me. The condition is two or three times more frequent in males. One-half of cases occur under one year of age and most of the remainder under two years.

The symptoms may be mild at first and may not cause the parent much worry; the patient becomes suddenly ill, is seized with recurring attacks of abdominal pain and may show signs of early shock. The pain is usually diffuse and may be followed by vomiting, though early vomiting is not a constant symptom. Absolute constipation is not the usual rule. Diarrhea with blood stained feces or mucus is common. The blood stained passages are not always present and fecal vomiting is seldom seen. Vomiting is much less marked than in other forms of obstruction. The abdomen is soft at first but later may become distended and tender. Pain is a variable symptom and may be evidenced only by grunting sounds which accompany the tenesmus, or the patient may cry out.

A tumor is discoverable in the majority of cases, the mass being on the left side in 50 per cent of cases. The mass may be felt by rectum in about one-third of the cases. At times the symptoms may be so mild that the obstruction may be entirely overlooked if sufficient attention is not paid to the condition of the bowel movements and to the presence of a tumor. Differentiation must be made particularly from appendicitis, primary pneumococcic peritonitis (rare), and colitis; conversely colitis may be mistaken for intussusception.

SYMPTOMS OF OBSTRUCTION IN GENERAL

After obstruction is established, peristalsis is at first increased and an accumulation of fluids and gases form in the bowel proximal to the obstruction with resulting distension. This distension later results in loss of contractile power. This accumulation of material develops a very toxic substance which is no doubt formed by a changed intestinal mucosa and is nitrogenous in chemical composition. The outstanding symptoms are those found with hyperperistalsis elsewhere. Pain is described as being cramp-like or colicky. Location of the pain varies with the position of the lesion; pain is referred to the peripheral spinal nerves associated with the sympathetic nerve supply of the viscus affected. Thus pain of the small intestine or appendix is referred to the region of the umbilicus while that from the large intestine is felt in the mid-hypogastric region. The pain is referred and not in the part involved. Local pain may develop later when secondary peritoneal involvement has developed. As a rule, the higher the obstruction the more severe the symptoms. At first there is a definite interval between the severe attacks of pain, but these rest intervals tend to become shorter, and later the pain becomes almost continuous. Very soon after the onset of pain, vomiting begins. This vomiting is not toxic but mechanical. The vomitus will contain stomach contents, bile-stained fluid, and later some contents of the small intestine. Later, there may be a bowel movement with possibly bloody mucus. After this there is complete obstipation in the majority of cases.

The higher the obstruction the more violent the reaction, so that delay is all the more dangerous in this type of case. These cases do not show the classical signs of distension, fecal vomiting and other symptoms common to lower bowel obstruction, but are likely to be fulminating in type. Involuntary muscle rigidity is absent until sec-

ondary changes have taken place. It is well to remember that we do not find all the text book symptoms in any one case but there are symptoms common to all types, such as colicky pain, vomiting, toxicity, and later distension. The symptoms vary greatly according to the pathologic conditions found at operation.

Patients with large bowel obstruction may continue to have pain, late vomiting and distension for a comparatively long period compared to upper intestinal cases.

Analysis of a series of cases shows that practically all those having distension, fecal vomiting and cyanosis were seen after forty-eight hours of acute symptoms.

CONCLUSIONS

1. Acute intestinal obstruction is comparatively common and is met with rather frequently in general practice.
2. Delay is fatal and surgical intervention offers the only chance for relief.
3. Doubtful cases should be given the benefit of an exploratory laparotomy.
4. If one waits for the classical symptoms to develop, the patient has a relatively poor chance for recovery.

CASE REPORT

Mrs. S., age 30 years, past history negative. One child three years old. First labor normal. Patient had been well since then. Second baby delivered Feb. 28, 1924. Normal, rapid labor. No handling. Normal for week, when fever and chills developed with pelvic infection. Baby developed erysipelas at this time. Infection cleared up though convalescence was very slow.

On July 17th this patient was again taken to a hospital with chills, high fever and evidence of acute pelvic infection. At this time a mass was present in the right groin with marked local inflammatory reaction, high fever, tenderness and fluctuation. It was now noted that the bowels were not moving normally and her condition soon became serious because of vomiting, obstipation, distension and signs of shock including very fast pulse and cyanosis. At this time the mass in her side was drained with the escape of pus and serous fluid. About twenty-four hours after this, feces were noticed on the dressings. This fecal discharge became copious and patient's condition improved but practically all bowel passages drained through wound. One or two attempts were then made to close the fistula from below.

She came under my care on August 17th. Pulse, temperature, urine and blood findings rather negative. All the feces drained through the fistula. Patient thin and general condition poor from malnutrition. Skin eroded and tissues angry looking around fistula. Condition improved somewhat until September 11th when operation was performed.

Abdomen was opened along outer border of rectus. A knuckle of bowel about thirty inches from the ileocecal valve was found adherent in the femoral canal. A section of bowel wall had sloughed off. Resection was done with end-to-end anastomosis. Portion of bowel in canal tucked down and covered with parietal peritoneum. Uneventful convalescence after the first twenty-four hours. Left hospital the thirteenth day.

February 18th hernial canal opened, cystic remnant of adherent bowel wall dissected out and femoral canal closed. Patient well since then.

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"PABST EXTRACT—THE 'BEST' TONIC" NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Pabst Extract—The "Best" Tonic is claimed to be "pure extraction of malt, properly flavored and combined with hops and is preserved by no other means than pasteurization." The preparation is stated to contain alcohol, by volume, 3.70 per cent, and 1.45 gm. of hops are used for the preparation of 12 fluid ounces of "tonic." The Council found Pabst Extract—The "Best" Tonic unacceptable for New and Non-official Remedies because (1) the name does not indicate the potent constituents —malt and hops—of the mixture; (2) the claim "The 'Best' Tonic" is not warranted; (3) the therapeutic claims are unwarranted; and (4) it is sold to the public with claims that tend to its indiscriminate and ill advised use. (Jour. A. M. A., Nov. 20, 1926, p. 1760.)

ORGANOTONES

"Organ-O-Tones No. 19" is one of a series of "shotgun" pluriglandular mixtures marketed by the Cole Chemical Co. and "pushed" vigorously as an "obesity" remedy, largely by means of postcards which tell nothing of the ingredients of the preparation. The product is said to contain: "Thyroid substance," ½ Gr.; "Pituitary (whole)," ¼ Gr; "Phytolaccin," ½ Gr.; "Apocynum (P. E.)," ¼ Gr.; "Organ-O-Tones No. 12" (containing "Sodium Bicarbonate," "Potassium Bicarbonate," "Calcium Glycero-Phos," "Calcium Phos. (dibasic)," "Magnesium Phosphate"), 3½ Gr. The complexity of the formula is exceeded only by the obviousness of the conclusion that the "Thyroid substance" is the ingredient intended to do the business. Organ-O-Tones No. 19 is, in effect, just another of the dangerous thyroid "anti-fat" nostrums to which attention has recently been directed. (Jour. A. M. A. Dec. 25, 1926, p. 2179.)

A FATAL CASE OF TULAREMIA IN MINNESOTA*

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On Aug. 27, 1926, I was called to see what was later proven to be the first reported case of tularemia originating in Minnesota. This case terminated fatally. It was acquired in Becker County, Minnesota, near Detroit Lakes. Since that time, there have been other cases reported but so far as I know none of these cases originated within the territorial limits of Minnesota, but came into the State after the disease was acquired.

Before going into the details of this case, it is perhaps well to give a few of the general outstanding facts incident to this relatively newly discovered disease. The literature on the subject is fairly brief, the pioneer and principal contributor being Dr. Edward Francis, United States Public Health Service, Washington, D. C. Tularemia was first discovered by McCoy in 1910. He termed it a "plague-like disease of rodents" because the appearance of the lesions resembled bubonic plague in ground squirrels of Tulare County, California. The disease was named "tularemia" by Francis in 1921. The first part of the name was taken from the county in which it was discovered and the last part of the name signifies the presence in the blood of the causative organism. Dr. Francis defines it as follows: "Tularemia is an infectious disease caused by *Bacterium tularense,* found in nature as a fatal bacteremia of rodents, especially wild rabbits, and transmissible to man by the bite of an infected blood-sucking fly or tick, or by the lodgment on his hands or in his conjunctival sac of the internal organs or body fluids of infected animals or ticks."

Zoologic Distribution (according to Francis):

1. Rabbits—cottontail, jack and snowshoe—are the greatest source of infection. One case in Montana was reported from the bite of a coyote; another from the same place was caused by the bite of a gopher. The laboratory animals are generally susceptible to infection when inoculated experimentally.

2. Wood-ticks of the species *Dermacentor Andersoni Stiles* transmit the disease from rabbits to man; they also transmit the infection through their eggs to the next generation of ticks. They carry the infection over winter and harbor the disease throughout their lives and pass it on to the following generations of the tick family through their eggs.

3. Flies of the species *Chrysops discalis,* blood-sucking flies, that bite horses, deer, rabbits and man, may carry the disease from rabbits to man on the same day or on following days.

Distribution.—Human cases have been reported by the United States Public Health Service from the following twenty-three states: Utah, Wyoming, Idaho, Ohio, Indiana, North Carolina, Mississippi, New Mexico, Virginia, West Virginia, Montana, Texas, Oregon, Kansas, Iowa, Kentucky, Pennsylvania, Missouri, Tennessee, Georgia, Arkansas, Maryland and South Carolina. The last fifteen states have been added to this list in 1925 in the order given. Japan seems to have the same identical disease but it is known there as "O'hara' disease."

From these facts it is easy to see how man may come in contact with tularemia. During the spring and summer months the fly and the tick get in their work. The rabbit, however, comes in contact with the human throughout the year, as the hunter, housewife, butcher and farmer frequently handle these animals. The disease has been acquired frequently by laboratory workers. It affects both sexes, young and old, black and white with no apparent discrimination.

Etiology.—The cause of the disease is the *Bacterium tularense.* It occurs both as a bacillus and a coccus in both tissue and culture.

Pathology.—The pathology in the human has not been very well described. In laboratory animals it affects the lymph glands, the salivary glands, the liver, spleen and conjunctival sac. It produces small necrotic foci over the liver and spleen of an infected animal; these are discernible to the naked eye in sunlight on the cut surface of the organ.

Incubation.—The incubation period is from one to nine days, the average being three days as determined by Francis in forty-nine cases.

In two hundred and twenty reported cases, Dr. Francis classifies tularemia in three clinical types: (1) *Ulcero-glandular,* the primary lesion being a papule, later an ulcer of the skin and accompanied by enlargement of the regional lymph

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glands; (2) *Oculo-glandular,* the primary lesion being a conjunctivitis and accompanied by enlargement of the regional lymph glands; (3) *Typhoid,* without primary lesion and without glandular enlargement, this type runs a persistent fever.

Symptoms and General Description.—The onset is sudden with headache, vomiting, chilliness, chills, aching bodily pains, prostration and fever. About forty-eight hours after the onset, the patient complains of pain in regional lymph glands and about twenty-four hours later may complain of pain at the site of infection. The site of infection shows a swollen, inflamed papule which breaks down to an ulcer about three-eighths of an inch in diameter and leaves a punched-out appearance. Red streaks may be visible on the extremity. In about half of the cases the glands break down and suppurate. In the other half of the cases they remain hard, palpable and rather tender for two or three months, gradually subsiding. The disease may run a number of weeks. The onset and duration in the three clinical types is much the same, except of course in the oculo-glandular type the conjunctiva is involved, while in the ulcero-glandular type there is a papule, and in the typhoid type there is persistent fever with no local symptoms.

Prognosis.—Out of two hundred twenty cases reported by Francis, seven terminated fatally.

Treatment.—No specific serum has been reported, which leaves the treatment entirely to the physician in charge to treat the various symptoms as they arise.

REPORT OF CASE

The patient was first seen on the afternoon of August 27, 1926, at her home about three miles from Detroit Lakes. She was a married woman, fifty-eight years old and her family history was unimportant.

The past history showed her to be the mother of seven children, six of whom were living and well. One had died from scarlet fever and its complications. In the main she had always been strong and well and had done a great deal of hard work at her duties of a busy housewife. There had been no past illness of any consequence, with the exception of three widely separated attacks of upper abdominal pain and on one occasion a physician had diagnosed the condition "gallbladder disease." About two weeks previous to her last illness, she fell down a flight of cellar steps and suffered a considerable contusion of the right lower chest and upper abdomen. At this time she stayed in bed three days but was then up and attending to her housework, although she suffered some pain in the upper abdomen until the final illness began. Just previous to this incident, she had taken a motor trip in the northern part of the state and in diagnosing her sickness this trip suggested the possibility of typhoid fever.

Last Illness.—The 21st of August, 1926, she dressed a young cottontail rabbit. This animal was shot near her home by her husband and was later eaten by the family. In cleaning the rabbit she sustained a small cut on the dorsal surface of the left thumb just over the phalangeal joint. The night of August 26th, she did not feel very well upon retiring but arose August 27th, and began the usual household routine. About noon she became very ill, had a severe headache, vomited large quantities of bile, suffered general pains all over the body, and rather severe abdominal distress and went to bed at noon with a temperature of 102.4, pulse 120, respiration 24.

Physical Examination.—A large muscular well developed woman, lying in bed breathing rather uneasily, face flushed, temperature 103, pulse 120, respiration 24. Eye reflexes normal, pharynx red but only slightly inflamed, but no conjunctivitis. The chest showed a few râles over the bases of both lungs but percussion note normal. The heart presented a soft mitral systolic murmur and was slightly enlarged to the left, rhythm irregular, blood pressure 120/75. The abdomen was moderately distended with a small degree of upper abdominal tenderness, more pronounced on the right, but no definite muscular rigidity.

The dorsum of the left thumb showed a small laceration, which was mildly inflamed.

Clinical Course of Disease.—The general appearance of the disease was very similar to typhoid fever. The temperature ranged mostly between 102 and 105, averaging about 103, with no particular regularity as to the rise and fall. The pulse was more rapid than the usual typhoid pulse. There was nausea, vomiting, headache, nosebleed, high fever, light chills, and extreme prostration. The cut on the dorsum of the hand showed pus on the third day of the disease, and two days later a mild lymphangitis. The epitrochlear was slightly palpable, one or two axillary glands were palpable and slightly tender; they were about the size of a large bean. The infected cut developed an ulcer, less than a half-inch in diameter; it had an irregular motheaten appearance, was rather superficial, but refused to heal when treated with mercurochrome. The white blood count varied between 5,000 on the second day and 12,500 on the fourth day, usually showing no leukocytosis. There was a small amount of albumen in the urine.

On the sixth day a papular eruption began to develop. This was progressive during the second week of the disease and on the twelfth day about two dozen papulo-pustules were found distributed over the chest, back, abdomen and thighs, very superficial in their location.

The patient was treated as typhoid fever but refused to improve. On the seventh day she became semicomatose, the prostration increased and the prognosis was then considered very grave. This was followed by a temporary remission of temperature, but on

the eleventh day the temperature and pulse both rose, her condition becoming gradually worse until she died on the fourteenth day.

Laboratory Tests.—White blood counts on the second day, 5,000; fourth day, 12,500; sixth day, 7,000; seventh day, 7,500; and twelfth day 7,800.

Widal negative on second, fourth, sixth, ninth and eleventh days.

Urine showed albumen and hyaline casts.

Urine and stool negative for typhoid and paratyphoid on the twelfth day.

Blood culture on the sixth day showed no growth.

Blood collected just after death from the brachial vein was forwarded, with a request for examination for tularemia, to the Hygienic Laboratory, United States Public Health Service, Washington, D. C. The report stated that the serum agglutinated *Bacterium tularense* in all dilutions from 1:10 to 1:320, but not in higher dilution, thus confirming the diagnosis of tularemia.

A later report stated that the blood clot injected into a guinea pig caused its death on the sixth day, with the typical lesions of tularemia, and that *Bacterium tularense* had been cultured from the pig. On September 23rd, a young cottontail rabbit was found dying near the patient's home. The liver, fixed in formalin, was sent to the Hygienic Laboratory, and the report was made that the characteristic small white nodules of tularemia were visible on the surface of the liver in strong sunlight, and especially with a hand lens. A second rabbit found dead in neighborhood of the patient's home and sent to Dr. McDaniel of the State Board of Health for postmortem and study showed the characteristic lesion of tularemia and likewise produced the same lesions in the inoculated guinea pig. Several other rabbits have been found dead in the same region during the summer.

Diagnosis.—Two consultants were called, Dr. Merriam of Duluth on the sixth day and Dr. Long of Fargo on the twelfth day. Typhoid or paratyphoid fever was regarded as the most likely diagnosis; septicemia was also considered; both consultants thought of tularemia. Finally, after the consulatation with Dr. Long a telephone conversation was held with Dr. Merriam and it was thought best to send a specimen of blood to the Hygienic Laboratories to see if the diagnosis could be made. At this time the condition of the patient was quite critical and the blood was refused. The blood was finally obtained when the brachial vein was opened for embalming. The Hygienic Laboratories found the agglutination test positive and were able to produce the characteristic lesions of tularemia by injecting the remaining blood clot into a guinea pig. The work on the rabbits further confirmed the diagnosis.

Summary.—1. This case of tularemia was acquired from a young cottontail rabbit.

2. Clinically, the case may be confused with typhoid fever. The diagnosis is made by absence of the Widal and a positive agglutination test for *Bacterium tularense.*

3. At least some of the rabbits near Detroit Lakes have the disease and may be a source of infection to the human.

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Note: I am greatly indebted to Dr. Francis of Hygienic Laboratories, and to Dr. McDaniel of the State Board of Health, for their laboratory tests.

GOITER PROPHYLAXIS WHERE THE INCIDENCE OF GOITER IS LOW.

A recent survey of goiter in Connecticut by experts of the United States Public Health Service indicates that the situation there is one that, in the opinion of the government consultants, does not call for the institution of state-wide goiter prophylaxis through the use of iodized water supplies, iodized table salt, or wholesale distribution of tablets containing iodine. The surgeons of the United States Public Health Service believe that prophylactic measures should be carried out among girls between the ages of 11 and 16 years, under the direction of local health authorities, guided and assisted by the state department of health and the local medical practitioners. The prophylactic methods chosen appear to be immaterial provided there is skilled supervision, low dosage of iodine, regularity and economy of administration. (Jour. A. M. A., Nov. 27, 1926, p. 1832.)

COD LIVER OIL EXTRACTS

The available evidence points against the efficiency of the products that have been included in the cod liver oil extract category. Vitamins A and D, in which cod liver oil abounds, tend to dissolve with readiness in fats or fat solvents. The so-called extracts are usually at best weak alcoholic fluids of very doubtful solvent power so far as the vitamins referred to are concerned. The malt extracts that may be incorporated with the proprietary mixtures may have potencies that cannot, however, be identified with the specific characteristics of the cod liver oil. Recently, vitamin concentrates have been prepared from cod liver oil by saponification of the latter, the potent substances being contained in the non-saponifiable fractions. Such a cod liver oil concentrate has been accepted by the Council on Pharmacy and Chemistry. (Jour. A. M. A., Dec. 11, 1926, p. 2019.)

NOTES ON EPIDEMIC ENCEPHALITIS*

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Thirty-five years ago, says Agnes Repplier, Andrew Lang, in a clever brochure entitled "How to Fail in Literature," warned young writers that there was nothing more to be written on the subject of Abraham Lincoln. This great American would ever be a matter of interest to an English speaking world but as a topic for magazine papers his day was over. In the past decade, says this gifted author, Poole has indexed more than three hundred magazine articles. Of scattered papers and editorials there is no limit and on the 12th of February, American poets become laureates and sing his deathless fame.

So great during recent years has become the literature of epidemic encephalitis that one might say with Andrew Lang there was nothing more to be written on this subject. Nothing could be farther from the fact. Its symptomatology is greater than that of syphilis. Of all diseases it is most protean in its manifestations, greatly surpassing hysteria in its power of simulation, in its milder phases frequently being mistaken for it.

The purpose of this paper is to call attention to some of the expressions of its many-sidedness, to note some recent forms of therapy and to emphasize its economic and sociologic significance.

The diagnosis of organic brain disease is much more difficult than it was before the epidemic of 1917, because, as Burr explains, of seemingly new and certainly unfamiliar clinical pictures which one is constantly seeing. So atypical has epidemic encephalitis become in its manifestations that no longer can the dagnostic criteria, fever, headache, diplopia and somnolence be depended upon in reaching a diagnosis. I have recently observed a case run a stormy course without the slightest evidence of temperature, and it is a matter of common observation that the sequelæ may appear without any preceding recognizable illness. Burr reports the occurrence of five cases of gradually developing Parkinsonianism without any distinct acute attack.

This unwelcome guest of the past nine years —an ever present menace to the community—has long outstayed his welcome and as yet shows no inclination to take his departure. Crookshank traces the disease back to the days of Hippocrates and shows that during the last 450 years there have been a number of epidemics in various countries of Europe. Gullan states that thirty years prior to 1917, isolated cases have been described, while the character of the disease was unrecognized. It is estimated that 20 per cent of the lethargic and 30 per cent of the hyperkinetic types die. Schultz and Stern, of Göttingen, estimate that in the province of Hanover alone from 1918 to the middle of 1924, there were a thousand cases of epidemic encephalitis and that approximately four hundred patients passed into the chronic stage. Familiarity must not breed contempt regarding the contagiousness of encephalitis. The disease is definitely contagious even in the chronic form. Guillain reports a case of what he calls contagious tardy epidemic encephalitis of Parkinsonian type. A man, aged 22, was allowed to sleep between two patients with post-encephalitic Parkinsonianism and contracted a typical lethargic encephalitis. He advises isolation of these patients and a warning of their friends that contagion is possible. In addition to this patent of Guillain's, White and Freeman have collected from the literature six other cases of infection occurring in the chronic stage or during acute exacerbations. An encephalitic case, a teacher, now under our care, had in her classes two pupils whose father was ill with lethargic encephalitis. Similar cases are noted in the literature. The spread of the disease by "carriers" would seem to be most probable. Stallybrass has reported a few instances of severe infection occurring in institutions. Guillain observed last year four instances of more than one patient in a family affected with this disease. Hall reports the case of a woman who developed encephalitis two weeks before her confinement. The child, at birth, was lively, active and well. Placed at the breast, it became torpid and somnolent. After weaning, it recovered immediately and remained well. He quotes another case in which the child became infected and died. McNally reports the occurrence of twelve cases in a building housing twenty-two

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people. Kling and Liljenquist report that in 1921 encephalitis was prevalent in certain villages of Lapland; that in some families several members contracted the disease simultaneously and in two houses almost all the inmates were affected. Marie cites an instance of two sisters suffering from the disease. Netter has seen three children occupying the same room, all affected with encephalitis. In an outbreak in an asylum at Mulheim in 1922, observed by John and Stockebrand, there occurred twenty-eight cases with thirteen deaths. At Eastbourne, England, in July, 1923, three brothers and a sister were attacked one after another with encephalitis. Jorge has seen it contracted from visiting a friend. Reese and Bassoe cite instances of nurses contracting it. Van Boeckel states that in West Flanders, out of twenty-six cases in four closely interrelated families, seventeen developed encephalitis and four died. Petren says that observations in the most northern part of Sweden showed that epidemic encephalitis was a true epidemic disease. It was observed to spread from house to house. In this same section the same observation was made regarding poliomyelitis.

Out of 2,483 doctors who died in this country in 1925, six died from epidemic encephalitis. Martyrs to their profession, their names should be added to those of Jesse W. Lazear, Howard T. Ricketts and Arthur W. Bacot: "Selfless souls," says A. H. Smith, "who have given not only their efforts but their lives in the struggle for mastery over ignorance and disease."

SYMPTOMS

Recent observation teaches that in a suspected case of encephalitis it is not the classical symptoms one should keep in mind but the unusual ones. Rashes, when present, occur early and during the pyrexial stage. Usually they disappear within twenty-four hours. The eruption may be petechial, papular, morbilliform, scarlatiniform or erythematous (McNally). Headache, a cardinal symptom, may be occipital, frontal or the entire head may be affected. Occasionally the pain is localized in or about an eye. This is quite distinctive of encephalitis. Headache may constitute the outstanding symptom long after the initial illness. It is of great severity and occurs irregularly. A patient said to me she would commit suicide, if it were possible, during a paroxysm, to escape the agonizing pain. The pain may occur at the onset of the disease or at a later stage. Rare points of its manifestation are the axilla and the perineum (Robb). Severe pain in the gums and cecum has been observed by Hunt. One of our cases developed a typical multiple neuritis with paralysis and atrophy of the muscles of both upper and lower extremities. The pain was very severe. In one of Dr. Sturre's* patients, a boy of four years, the outstanding symptom for five weeks before he was consulted, was pain in the legs, which prevented walking. It lasted for an hour or so, then ceased only to return later. Two cases of my own complained bitterly of pain in the neck muscles; later this was followed by their paralysis with complete loss of the head movements; the head would fall forward and backward, from one side to the other, the patient being absolutely unable to control it.

In a previous paper, I have called attention to epidemic encephalitis simulating acute surgical lesions of the abdomen. Last winter an acute encephalitic complained of severe abdominal pain with tenderness and occasional vomiting. Fearing an acute abdomen, I had Dr. Arnold Schwyzer see her. His findings were negative. In 1919, Bassoe saw a child whose appendix had been removed. The diagnosis of encephalitis was confirmed by autopsy. Dr. Stevenson reports four cases admitted to the hospital as acute abdominal disease. Three were definitely cases of encephalitis. The fourth was operated upon for appendicitis. The appendix was found to be normal. Because of the obscure symptoms no definite diagnosis was made. The history was clearly that of an encephalitis. Dr. Howell states that he has seen encephalitis diagnosed as appendicitis and that a similar mistake sometimes is made in poliomyelitis.

The interesting observation that personality changes may precede the appearance of unmistakable symptoms of encephalitis has been made by Dr. Massant. Cranial nerve palsies are regarded as of great diagnostic importance, yet frequently they are wanting. Diplopia may be the earliest symptom; usually it does not appear until the second or third day; it may disappear within a few hours; it may be so transient that the patient forgets that it has ever been present. Only persistent interrogation

*Personal communication, Dr. J. R. Sturre, Watkins, Minn.

elicits this fact. Ocular palsies, the most important of Netter's triad—fever, somnolence, ocular palsy—may last from a few hours to six months. There is a small residual of these that are permanent and may greatly cloud the diagnosis, frequently being mistaken for tabes, paresis and myasthenia gravis. Ptosis and nystagmus are common symptoms; external and internal ophthalmoplegia occur; the latter may be the only ocular symptom. The pupils may be small, dilated, unequal, or they may present the Argyll-Robertson syndrome; they may fail to react to light or accommodation. Failure in accommodation is of diagnostic significance. Hemorrhages, papilledema, choked discs and hemianopsia have been observed. According to Gordon, the early appearance and persistence of diplopia, ptosis and the Argyll-Robertson pupil indicates lues rather than encephalitis. The 5th, 7th and 12th nerves may be involved. Deafness occurs but rarely persists. Yawning is of common occurrence in organic brain disease. Hunt reports an extreme manifestation of it in a case of epidemic encephalitis. For two or three weeks the patent yawned from three to five times an hour while awake, less frequently during sleep; yawned immediately if aroused. Three times he dislocated his jaw. Tucker, in 1918, discussed the involvement of the pituitary body in encephalitis; polyuria is common. A patient of Robb's passed from 500 to 600 ounces of urine daily. This ceased after lumbar puncture. Garrett and Gutman's patient passed ten liters daily for ten days (Hunt). Paulin reports the voiding of 12,000 c.c. of urine in 24 hours by a young man who four years previously had had an attack of encephalitis. Diabetes insipidus must be recognized as a sequel, although no lesion of the hypophysis has as yet been found. Foster Kennedy, Mackfee Campbell and Sanborn have reported cases. Pardee cites an unusual case of abnormal tongue movements as a sequela of encephalitis. The mouth would open, the tongue protrude and manifest choreathetoid motions. Several months prior to these there had been chewing movements. Hunt states that he has seen the report of six similar cases—four in French and two in German literature. Abrahamson has observed six similar cases in which the movements were not so pronounced.

The onset of encephalitis may be insidious or cyclonic in character. It may assume the garb of any known form of nervous disease. In three of my patients it camouflaged an involutional depression, a neurasthenia and a disseminated sclerosis.

Several years ago, A., in his fiftieth year, consulted me, complaining of insomnia, of a fear that something dreadful was going to befall him. He was depressed and occasionally in conversation would use the wrong word. There were no objective nervous symptoms. Some weeks later he developed delusional ideas, persecutory in character. There was no fever, no ocular palsy, no somnolence. The serologic findings were negative; then a rise of temperature occurred and the symptoms no longer permitted of doubt as to their encephalitic character. The disease ran a rapid course, the patient dying within a week after the rise of temperature.

Miss E., a young woman 30 years old, consulted me for "nervousness." There had been no definite illness. Two deaths in the family greatly distressed her. She tired on the least exertion, was irritable, unreasonable; lacked initiative; she slept badly, was greatly terrified by dreams; neurological examination was negative. Suddenly the smoldering infection of nine months' duration flamed into the most acute and distressing phase of encephalitis I have ever seen. There was great pain in the head, neck, abdomen and both upper and lower extremities—evidently a neuritic phase of the disease; vision was blurred; she was greatly distressed by terrifying hallucinations of sight and hearing. These especially worried her because she feared she was becoming insane. There was double Kernig; she lost control of her head movements. The head would fall forward, backward, to one or the other side as gravity determined. She lost all power in her hands and for weeks had to be fed; for many weeks she was unable to stand on her feet. Gradual improvement occurred and, when seemingly convalescing, the acute symptoms returned in great intensity; her suffering was greater, she said, than during the first attack. She again became convalescent and recovery occurred.

Mrs. H., aged 35 years, gave a definite encephalitic history. She is a Parkinsonian. There is a distressing sialorrhea; her staccato speech, intentional tremor, exaggerated reflexes, ankle clonus, weakness and ataxia are those of a typical disseminated sclerosis. The multiple sclerosis syndrome is an accredited sequela of epidemic encephalitis.

SEQUELÆ

The post-encephalitic respiratory syndrome, unfortunately, is too well known. The dyspnea associated with it differs radically from that seen in the respiratory cardiovascular disorders, the toxemias and the Cheyne-Stokes respiration. So bizarre are its manifestations that some of its phases have simulated a clear-cut hysteria. This

:quela may occur months or more than a year ter the acute attack.

Gamble reports a most unusual case in which ıere was a post-encephalitic tic of the dia-ıragm, where rapid chest movements with ight excursions of the thorax had been mis-ken for respirations, tending to follow the fre-ıently repeated tic, which occurred between 60 ıd 90 times a minute; the chest movements aried from 36 to 70 times a minute.

There is no symptom of disease more com-ıon than hiccup, so common as to be trivial, any times regarded as a joke—sometimes, as alcoholism, it is an object of sarcastic humor—et it may possess a grave significance, at times, s in pneumonia and typhoid fever, causing eath. It may usher in an attack of encepha-tis, complicate its acute phase, or, as in the case ıst cited, constitute a distressing sequela. The rst appearance of epidemic hiccup occurred in ienna in the winter of 1919-1920 (Economo). arge numbers of people were suddenly attacked ith uncontrollable and almost incessant hiccup, hich resisted all treatment. Usually after sev-al days or a week it ceased spontaneously. In ıany cases the patient hiccuped as frequently s every three or four seconds. In one instance, ıe hiccup lasted for a month, there being only a ew hours respite each day. About 1921 it be-ame epidemic in this country. This epidemic eems to have been associated with the outbreak f epidemic encephalitis. Lhermitte believes ıere was a causal connection between these two iseases. French clinicians, notably Netter, share ıis view. Sir John Robertson, health officer, irmingham, 1924, believes that epidemic hiccup ıay be a symptom of encephalitis of a mild type. n Brain's patient, for a month there were in-rmittent brief attacks of hiccup; then the typi-al symptoms of lethargic encephalitis, with ocu-ır palsies developed. This case, he believes, es-ıblishes finally the relationship between epi-emic hiccup and epidemic encephalitis. The xperiments of Rosenow give much support to ıis close relationship. Cadham reports two epi-emics of hiccup in Winnipeg; 2,400 cases in l. Ninety per cent of the patients were males; ıere were no deaths. The chief characteristics ere intermittent muscular spasms, neuritis, slow ulse—never over 75; normal and subnormal mperature.

SPINAL FLUID

Blood in the spinal fluid is not an unusual occurrence; it is a symptom arising from many and various causes and of itself possesses no distinctive diagnostic significance. It does not mean a distinct clinical entity—that is, it has no constant and uniform base. As well make of fever an entity, which is a symptom only of most diverse pathological conditions. Meningeal hemorrhage—blood in the space between the arachnoid and the pia mater, which is normally occupied by the cerebrospinal fluid—when not due to trauma but resulting from a rupture of a meningeal vessel or an aneurysm (frequently congenital), is called spontaneous subarachnoid hemorrhage. Why a pia-arachnoid hemorrhage, with its attendant meningitic syndrome arising from varied causes should be dignified as a clinical entity instead of being regarded as a symptom common to different diseased conditions, I can see no adequate reason. Why meningeal hemorrhage in epidemic encephalitis—an infection recognized to have a special predilection for the cerebral vessels—should be classed as spontaneous subarachnoid hemorrhage passes my comprehension. Serous meningitis can give a clinical picture similar to that of spontaneous arachnoid hemorrhage, differentiation being possible by lumbar puncture alone. It is the site of the hemorrhage or accumulation of spinal fluid in the pia mater and arachnoid arising from a great variety of causes, many known, others unknown, which gives rise to a fairly well defined syndrome. The cardinal characteristics of so-called spontaneous meningeal hemorrhage are—the location of the accumulation of blood or spinal fluid, the vague and ill-definied symptomatology and the diverse and manifold pathology—a neurological wastebasket. The appellation spontaneous meningeal subarachnoid hemorrhage is a misnomer. Spontaneous hemorrhage is as inconceivable as spontaneous generation. The concept is unscientific and absurd. Blood in the spinal fluid should be regarded as a symptom pure and simple—a symptom absolutely lacking in distinctive diagnostic significance.

Hemorrhage in encephalitis, epidemic and non-epidemic, is a well recognized symptom and not so rare as commonly supposed. During the year extending from December 31, 1923, to December 31, 1924, thirty-two cases of epidemic en-

cephalitis were admitted to the Boston Psychopathic Hospital. Three of these patients showed xanthochromia—9.38 per cent—a symptom of relatively frequent occurrence. The mental symptoms in these three cases greatly overshadowed the physical ones, which indicates, Dr. Rothschild suggests, that xanthochromia is more likely to occur in those cases in which the mental symptoms are especially prominent. Within the past six months I have come in touch with three patients suffering from the hemorrhagic form of epidemic encephalitis. Of these, the most interesting was the patient of Dr. Hensel, who two years before had experienced an apparently similar attack, the blood in the spinal fluid being a marked feature of both illnesses. Recrudescence in epidemic encephalitis, as in disseminated sclerosis, is a well known fact and may occur repeatedly after an interval of months or years following the initial illness, being due probably in both instances to the variations in the activity of the infecting organism. Before the days of lumbar puncture, there died in my service at the City and County Hospital, a young woman, supposedly from chorea. Autopsy showed both the gray and the white matter of the brain dotted with small hemorrhages. Lumbar puncture would undoubtedly have shown a bloody spinal fluid. Farquhar Buzzard believes that in epidemic encephalitis the virus has a specific affinity for the cerebral vessels and that grave vascular accidents are more common in this form of encephalitis than in the other encephalitides. Remarkable changes have been found in the vessels, characterized by hyaline and calcareous degeneration of the vessel walls, confined largely to the media and adventitia. The hemorrhages, thromboses and infarctions incident to the acute stage will explain, he believes, many of the symptoms. The progressive deterioration frequently observed in these patients is undoubtedly due to the precarious nutrition of the brain tissue resulting from the degeneration of its vessels.

NARCOLEPSY

Encephalitic narcolepsy is an unusual but a well recognized sequela of epidemic encephalitis. Frequently it is mistaken for lethargy; short attacks of sleep occurring several times during the day may follow encephalitis. These may disappear after a few weeks (Redlick). Narcolepsy is of rare occurrence. I can recall only two cases in my professional experience. Two years ago I had a patient who would fall asleep frequently during the day. A restful night did not lessen this tendency. The sleep was apparently normal. She had an expressionless face and there was marked asthenia. There was a clear history of an encephalitic attack. Following excitement, she did not complain of a sudden weakness extending to the lower limbs, as is common in these cases (true narcolepsy). In Perrier's two cases, narcolepsy occurred soon after an attack of epidemic encephalitis. There were from twenty to thirty attacks in a day. Redlick and Stiefler have observed a typical narcolepsy in encephalitis (Spiller). Spiller could trace no definite relation in his three cases of narcolepsy to encephalitis, but knowing that this post-encephalitic syndrome may at times be the only sequela such a presumption in his and similar cases would seem to be justifiable.

PARKINSON SYNDROME

In the epidemic of encephalitis in Japan in 1924, the Parkinson syndrome was rare and eye symptoms seldom occurred. In 25 per cent of the cases of epidemic encephalitis, the Parkinson syndrome occurs (Hall). It may develop months and years after the initial illness, the patient in the meantime being in excellent health. There is a sharp contention among neuropathologists as to whether the globus pallidas, the substantia nigra, the other portions of the extrapyramidal system, or the entire central nervous system, is the seat of the lesion essential to the production of the so-called "Parkinsonian states." Souques believes that ordinary paralysis agitans is not a morbid entity but a syndrome common to different causes which affect the same cerebral region. In his opinion, it is not so much the nature of the cause as its situation; the site is almost everything. In both paralysis agitans and the Parkinson syndrome due to encephalitis, the cells of the pallidum and the substantia nigra show atrophy. The similarity of the clinical symptoms at times in these two diseases is not, therefore, surprising. Spiller states "that there are cases of post-encephalitic Parkinsonianism which no one could mistake for the true paralysis agitans where there are complications such as the upward spasm of the eyes and head. There are cases with onset late in life, with the characteristic features of true Parkinsonianism, which one can be reasonably certain are of the true type, but

ıere are other cases in which I am utterly unble to be certain which form is present. The te of the disease undoubtedly is of great imortance in the production of the symptoms and ıe pathology may vary; true Parkinson probably degenerative; encephalitic Parkinson is inammatory." The researches of McKinley and owan indicate that the substantia nigra is the te of the lesion; the neuron decrease in this rea varied from 58 per cent to 87 per cent, ıere being only minimal changes in the globus allidus. Scattered lesions in other portions of ıe brain were so insignificant as not to warrant ıvestigation. So far as their three cases were oncerned, the substantia nigra appeared to be ıe essential factor in the causation of the syrome. Hassin and Bassoe place the lesion in ıe extrapyramidal system, chiefly in the basal anglia and the substantia nigra. They regard the Parkinsonian states" as distinct pathological enties. Hohman says that although the clinical eatures of encephalitic Parkinsonianism may be ıid to be indistinguishable from those of palysis agitans, yet the pathologic process in the vo conditions is entirely different and is "a ıronic progressive degenerative inflammation of ıe central nervous system." Byrnes states that ıe Parknsonian states are often accompanied by lesion in one or more of the basal ganglionic ructures; that it is impossible to determine the xact location of the lesion and that "the pathogical and clinical identity of the two diseases is ot yet universally recognized." The neoropathological findings show no unanimity of opinion s to the location of the pathologic process.

Parkinsonianism shows certain distinctive ıaracteristics. The increased muscular tone ves rise to postural changes characteristic of ıis condition. Such abnormal postures in a ormal person would be exceedingly tiresome but ıese patients seldom complain of undue fatigue. remor is not so constantly present as in palysis agitans proper and sometimes, as in this tter disease, is entirely absent. The Parkinson ndrome may be very incomplete; frequently is limited to the face or an arm or it may ssume the hemiplegic type. The latter is quite ommon and the prognosis in these partial cases have found much more hopeful than when the ıtire musculature of the body is affected.

OCULAR MUSCLE INVOLVEMENT

Hohman has observed as a sequel coming on from one to six years after the initial encephalitic attack an involuntary turning up of both eyeballs for several minutes or hours at a time. This symptom was not supposed to exist outside of hysteria until 1924, when similar cases following encephalitis were reported by three different German writers (Bassoe). In two of our cases there was a temporary tonic spasm of the superior rectus and inferior oblique and of the inferior rectus and the superior oblique. The turning of the eye upward movement predominated. Pressure over the supra-orbital notch relaxed the spasm, which lasted from a few minutes to several hours. Gordon cites two similar cases. Dr. W. W. Lewis has most kindly called my attention to the following two cases of vertical nystagmus with fixation phenomena, reported by Dr. Perkins in the American Journal of Ophthalmology, August, 1926. These patients were characterized by vertical nystagmus and fixation of the eye upward, coming on many months after an attack of epidemic encephalitis. He states Fischer has described a similar condition in five cases, Ewald in five, Myers in two and Hohman in four. In the first patient the nystagmoid movements began two years and four months after the acute illness, and preceded the holding attacks eight months. In the second, the nystagmoid movements began two years and six months after the initial sickness, while the holding attacks began four months later.

VARIOUS SYMPTOMS

Superficial and deep reflexes may be increased; unilateral Babinski is common; ankle and knee-clonus may or may not be present. There is marked fatigability of the reflexes (Hunt). Sialorrhea is frequently a distressing symptom. The tongue in this syndrome has received scant attention. It is a diagnostic factor of great importance in the early stage. Usually it is coated, swollen and flabby. If not coated, it may be angry-looking, dry and cracked, "typhoid-like." In one form or the other a foul tongue is practically always present (Reynolds). The pulse is increased; averages 100. The failure in muscular power is less than in ordinary paralysis agitans. Impulsive tendencies may be present. Young patients show marked personality changes, *i.e.*, irritability and loss of emotional control. Adults may be subject to spasmodic crying and laughing, to depression, apathy, euphoria simulating that of paresis. These symptoms are more common in

the female. Parkinsonianism manifests paradoxical characteristics—the so-called "kinesia paradoxa." Howland (Toronto) told me of a patient of his with marked Parkinsonianism, who, if placed on a bicycle, rode with ease, expertness and dash. The getting on and off the bicycle was a matter of some difficulty. Also of another patient whose muscular rigidity was completely relieved for some hours if given a good drink of whisky. One of our patients, absolutely helpless, requiring constant care, sometimes after awaking from sleep would temporarily be free from all increased muscular tone; he would walk around the room, telephone, talk normally; then again relapse into his Parkinsonian shackles. One of Dr. Hengstler's cases would walk or run quite naturally if she accelerated her movements. Hall reports the case of a young man, quite helpless, who after a sea bath would sprint along the beach as if he had never been ill, only to return to his state of immobility. Recently I saw an elderly patient who had been in a streetcar accident; previous to its occurrence, she had been in her usual health. Immediately afterwards she developed a typical Parkinsonian syndrome. In the ordinary paralysis agitans and in neurosyphilis, it is well known that trauma will unmask a latent condition awaiting opportunity for development.

PROGNOSIS

Some Parkinsonians die within a few months. The young manfest no more recuperative power than those more advanced in life. According to Howell, the early occurrence of this syndrome in the acute attack clouds the prognosis. Most commonly the disease becomes stationary, leaving the patient a helpless and permanent invalid. In a small proportion of cases, improvement takes place even in patients who for a long period have been bedridden and helpless.

Every case of epidemic encephalitis shows some disturbance of the psyche, be it ever so slight. There is an anatomical and physiological reason for the great difference in the nervous and mental symptoms seen in the child and adolescent on the one hand and the adult on the other. The new-born child is an automaton. The nerve cells necessary to life predominate in function. Following life's ageless patterns, the dendrites and axis cylinders grope their way along their predestined paths until the 18th year, when the marvelous artistry of the nervous system is achieved. Of the countless millions of brain cells, each has found its anatomic relationship. Having antomically arrived, for the next seven years —the completion of adolescence physiologically speaking—the nervous system has to find itself; nerve courses have to be charted, nerve currents have to find their appointed channels. Encephalitis occurring during this period, before the mechanism of the nervous system is anatomically, physiologically and psychologically perfected, is a grave cerebral disaster. The ill effects following such an infection may be tragic, far-reaching and largely irremedial. The personality of the child and adolescent is often metamorphosed by the virus of encephalitis. Incorrigibility, obscenity, lying, stealing, suicidal impulses, sexual abnormalties, phobias, hysterical manifestations, extreme irascibility, sleeplessness, changing night into day are recognized sequelæ. Freeman (Washington) believes that the causative agent in epidemic encephalitis persists long after the subsidence of the acute attack—that the term post-encephalitic disorder is a misnomer—that the so-called sequelæ are due to a continuance of the infection just as much as patients with dementia paralytica are suffering from a persistence of the spirochete. In the acute stage of epidemic encephalitis, the mental symptoms usually are the same as those common to toxic infectious disease lethargy, stupor, coma, delirium and mental confusion; the two latter symptoms are rarely absent (Kidby). The delirum in encephalitis ofttimes resembles that of delirium tremens; occupational delirium and talkativeness are more common than in the other toxic conditions. Dr. Folsom has shown that more than 85 per cent of the cases suffering from the post-encephalitic psychoses in the Manhattan State Hospital present a clinical picture of emotional instability, plus disorders of behavior and delinquency. His findings indicate that the main clinical expression in encephalitis is marked and often lasting disturbance of the emotional mechanisms. The "emotional stupor" described by Kennedy is a definite inhibition of effect as seen in lethargic and stuporous phases of the disease.* The grave psychotic reactions such as the schizophrenic syndrome, the manic-depressive psychosis and paranoid states occur but not as frequently as commonly supposed. An encephalitis occurring during the course of a dementia precox or a manic-depressive psychosi

*Archives of Neurology and Psychiatry, April, 1926, Page 51

does not in any way modify the familiar symptomatology of these affections. The explanation of these more complex psychotic reactions is to be found, Kirby believes, in the underlying personality and the psychologic make-up of the individual. Notwithstanding the abnormal emotional instability in encephalitis, the higher psychic functions are well preserved. The mental deterioration and dementia present in other organic brain diseases are wanting in this disease.

SPINAL FLUID

The blood changes in epidemic encephalitis possess no striking significance—a moderate leukocytosis, the total count varying from 10,000 to 12,000. The spinal fluid findings are, however, of great importance. The test of the sugar content has a certain diagnostic value. Readings above the normal are the rule. This increase of glucose can in no way be considered pathognomonic. MacPherson reports a case in which the clinical picture was similar to that of a tuberculous meningitis or an epidemic encephalitis; because of the high sugar content in the spinal fluid a diagnosis of encephalitis was made. Autopsy showed it to be tuberculous meningitis. An increase of the sugar content in the spinal fluid has been observed in paresis, cerebral syphilis, in a majority of the febrile illnesses, in convulsions, brain tumor, meningitis, to which MacPherson's case is a rare exception, for the spinal fluid sugar to be decreased. In the early stage of tuberculous meningitis it may be normal or slightly increased (Greenfield and Carmichael). Unless there is a meningeal hemorrhage, no fibrin web is found in epidemic encephalitis. The spinal fluid may or may not be under pressure. It is of a "water clear" appearance. There is generaly a trace of globulin which bears no relation to plecytosis or the clinical type of the disease (Hunt). There is a moderate lymphocyte increase, always of a pure mononuclear character; usually ten cells per cu.mm..; 30 to 100 cells per cu.mm. are occasionally observed. The increase in cells occurs early in the disease; then gradually returns to the normal. Polymorphonuclear cells escape in hemorrhagic cases into the spinal fluid along with the blood corpuscles. Ayer says there is a slight increase in the protein content; other writers assert that it remains within the normal limit. The gold-sol reaction has a diagnostic significance; it is seen mostly in the eutic zone; occasionally the paretic curve is observed. In post-encephalitic cases, abnormal gold curves are less frequent and of a weaker type. The chlorides are not altered—a valuable diagnostic point in eliminating a meningitis. Greenfield and Carmichael state "that the Wassermann reaction is never positive in the spinal fluid, even in cases which give a positive reaction in the blood. This may be taken as the chief determining factor in the differential diagnosis between meningeal syphilis and encephalitis lethargica."

A careful serologic examination by trained laboratory workers of the cell count, the type of cell, the globulin, the pressure, the color, the protein, the chlorides, the sugar content and the gold-sol reaction, will in a large majority of cases show marked abnormalities in the spinal fluid in epidemic encephalitis.

THERAPY

The therapy of epidemic encephalitis will continue to be empirical and unsatisfactory until an antitoxic serum or vaccine is produced from the specific organism itself. Spinal drainage in the acute attack is a therapeutic procedure of unquestioned value; it is especially indicated in the hemorrhagic form. The intravenous use of Argotrophine is advised by Marburg and Wimmer. To an initial dose of one ampule (15 grains) of sodium salicylate given intravenously, should be added one ampule daily until the point of therapeutic saturation is attained. Sodium salicylate, the intravenous injection of the patient's spinal fluid, the intraspinous injection of the blood serum, activated or unactivated, intramuscular injection of sterilized milk, "fixation abscess" and many other forms of treatment have been used in this infection, all of which emphasize our therapeutic helplessness in this dread disease. Visher has successfully treated with intravenous injections of gentian violet, three cases of encephalitis following typhoid fever and one case of chorea associated with endocarditis. Gentian violet is non-toxic and should be given a trial in epidemic encephalitis.

During the past year, of fourteen acute cases treated with acriflavine by Dr. Hengstler and myself,* three died, eleven were improved and of these five completely recovered. Improvement is usually observed after the second or third injec-

*Since this paper was written, two physicians have reported to me four acute cases of epidemic encephalitis to which they gave acriflavine intravenously, following my suggestion (Minnesota Medicine, December, 1925). All made excellent recoveries.

tion. After apparent recovery in one case, there was a return of the symptoms, which disappeared during the second course of acriflavine injections Dr. Birnberg reports the recovery of a child from encephalitis, to whom at my suggestion he gave acriflavine intravenously. In a case referred by Dr. Hensel, the improvement after acriflavine intravenously was satisfactory; all symptoms of encephalitis disappeared; there developed, unfortunately, an obscure abdominal condition which caused death. In another extremely critical case, definite improvement began after the second course of intravenous acriflavine injections; the patient recovered.

Acriflavine has great potentialities; it can be used in every case where an antiseptic is indicated. It possesses definite bactericidal properties and it is non-toxic in its effect on the tissues. Johnson advises its hypodermic use in advanced cases of pulmonary tuberculosis and states that the results obtained exceeded his expectations.†

A purified form of neutral acriflavine is especially prepared for intravenous use; it comes in ampules. It should be administered immediately after the preparation of the solution. Great care should be taken during the injection to prevent any escape of the fluid into the perivascular tissues, such mischance causing redness and great pain over a region greatly exceeding the affected area. The dose is 10 c.c. of a 0.5 per cent solution. The injection should be given slowly at the rate of 10 c.c. in five minutes in order to avoid distressing symptoms such as a gasping respiration with air hunger, associated with a sensation of heat, affecting the mucous membrane of the respiratory tract, added to which may be an intense lacrymation. The patient should be told of the yellowish coloration of the urine, mucus and other secretions, to avoid needless anxiety. Observation teaches that if acriflavine escapes in the perivascular tissues the vein is obliterated. On different occasions because of this I have been unable to repeat the usual number of injections—eight—when the second series was indicated. King has noted that frequent venous punctures cause thrombosis and render the vein useless.

Any attempt to explain the *modus operandi* of the various forms of therapeutic procedure in the Parkinson syndrome is uterly futile with our present knowledge. There is, without doubt, in the Parkinsonian, a marked psychic factor which is influenced to a greater or less degree by the diverse forms of therapeutic approach. The "tied up by the muscles" feeling, due to the structural changes in the pallidum and the substantia nigra causes a "sense of constant oppression" which paralyzes all initiative and spontaneity of action—most disastrous psychically to the patient. Once relieve this and a feeling of well being and hopefulness is experienced, which, says Hall, "extends its beneficent influence on every part." All forms of treatment probably relax the hypertonia if the reports of improvement following the use of these different methods are to be accepted. Moll has used nicotine in thirteen cases of the post-encephalitic syndrome; nine showed improvement; four were not benefited. The initial injection is 1/30 of a grain, three times a day; if there is no appreciable change in the pulse it can be gradually increased provided there be no symptoms of intolerance until 1/10 or 1/5 of a grain is given. Nicotine does not influence the tremor of sialorrhea, but it does lessen the hypertonia. Six months after its discontinuance, all of the nine patients had relapsed into their former condition. Twenty-five years ago, Erb called attention to the relief experienced in paralysis agitans by the use of hyoscine hydrobromide. Since 1917 it has been much used in the so-called post-encephalitic Parkinson syndrome. In eighteen cases in which it was used by Hohman, there was slight improvement in six; in five it was definite and in seven marked. Some of these patients, after months of invalidism, were able "to attend to personal wants after being bed-ridden and helpless." In half of the cases in which scopolamin was used by Kennedy, Davis and Hyslop, they observed that there was a lessening of the rigidity, a restoration of the facial mobility and that the patients were generally more comfortable. Gelsemium, they found, had an effect similar to that of scopolamin and in the same proportion of cases. The former, they believe, is to be preferred over the latter because "it can be used for an indefinite time and has none of the dangerous concomitant effects of the latter." The disappointment of some of us in the use of hyoscine was in a measure due to the small dosage, caused by our reluctance to prescribe so potent a drug when the patient was not under our immediate observation.

†Johnson, G. H.: Injections of acriflavine for tuberculosis. Brit. Med. Jour., Mar. 27, 1926.

Hall believes that belladonna, by acting on some part of the neuromuscular area, relieves the hypertonia, knocking off, as it were, the shackles from the muscles. The higher nervous centers, being thus unfettered, will do the rest. Belladonna and hyoscine—the atropine group—are therapeutic agents of unquestioned worth, the former being the more efficient. He (Hall) first used belladonna for the relief of the sialorrhea with disappointing results until the dosage was increased from ten to thirty minims thrice daily. Under this treatment the general condidion of the patient so greatly improved that he then tried it in the Parkinson syndrome. Out of nineteen cases, says Hall, six received no benefit. Three reported they were better but there was no objective evidence of this. In ten there was no question regarding the improvement; in some it was astonishing; a surprising change for the better may be observed a few days after the medicine is taken. Foster Kennedy reports a striking therapeutic result in a middle-aged Parkinsonian who could neither articulate, chew, nor move her arms or legs voluntarily, yet after the use of a suppository of belladonna "of tolerance dosage" she could talk fluently, move quickly and gracefully and express her emotions in a normal manner. While the respite was but temporary, yet the same response was invariably obtained.

As to the permanency of this change induced by the atropine group, only time can determine. Several years ago, I called attention to the intravenous use of sodium iodide in the treatment of the Parkinson syndrome. Further observation has confirmed the opinion I then expressed. Castro and Folsom* both advise the intravenous use of sodium iodide in the post-encephalitic psychoses. It stabilizes the emotions, relieves the apathy, depression and irritability and it tends to make the patient pleasant, sociable and agreeable. Folsom says this treatment is only in the tentative stage and that it would seem "that cases do better under such therapy than without it." Fifty c.c. of a ten per cent sodium iodide solution in sterilized water, sterilizing the solution before each injection, should be given intravenously twice a week, until a total of 90 gms. of sodium iodide has been administered. Escape of the solution into the surrounding tissues causes a slight burning sensation which disappears in a few moments. The only symptoms of which patients complain is a peculiar saline taste, which may last from twelve to twenty-four hours. Belladonna can have no influence on the actual lesion but if used in connection with the sodium iodide its synergistic effect would, I believe, be very beneficial.

*Castro, Herman R.: Sodium Iodide Therapy in post-encephalitic psychosis. The State Hospital Quarterly, February, 1926.

PSYCHIC MANIFESTATIONS

The psychic factor in the Parkinson syndrome must not be overlooked. One should ever keep in mind Hutchinson's "chronic abdominal woman" who recovered completely for several weeks after each successive laparotomy (Hall). The elimination of this element and the employment of one or more of the various methods of therapeutic endeavor will tend to greatly ameliorate the hapless condition of these unfortunate patients.

During the past nine years the medical mind has been so absorbed with the etiology, the symtomatology, the pathology and therapy of epidemic encephalitis, the most serious, perhaps, of the four† great infections of the central nervous system, that it has failed to appreciate sufficiently that mental disease, behavior disorders and delinquency may follow in its wake. These disastrous after-effects may occur months or, in rare instances, as long as five years after the initial illness.

"Encephalitis" says Economo, "has given us an entirely unexpected insight into psychological and physiological mysteries of mental mechanism—a knowledge which will perhaps exercise a great influence upon *others beside the medical* profession." In England the curve of cerebrospinal meningitis has noticeably declined since 1917; that of poliomyelitis has likewise fallen, while epidemic encephalitis since January 1, 1919, has shown a rapidly ascending increase except that during 1925 there has been a gradual fall (Auden). During the last year we have seen more cases of epidemic encephalitis than at any time during the past nine years. Marie, in his introduction to Gabrielle Levy's work on encephalitis, spoke of the virus which, exploding like a shrapnel shell, affected all parts of the nervous system. To children and adolescents epidemic encephalitis has been unspeakably cruel;

†Poliomyelitis, polioencephalitis, cerebrospinal meningitis and epidemic encephalitis.

to the adult a Damoclean sword. The minority of these patients die; the physical and mental derelicts, the moral and sexual perverts, the pathologic criminal and the socially inadequate constitute perhaps 70 per cent of the survivors (White and Williams). Apparently, according to Freeman, only one patient out of six ever recovers completely. The sequelæ of encephalitis are more tragic than those of all other infections of the nervous system combined. The late Sir Frederick Mott, in his Chadwick lecture, cites the recent epidemics of encephalitis in which the moral sense of children and young adolescents is affected. What can be done to stem this annual encephalitic contribution to the psychotic and the unfit? Under proper medical, educational and environmental care many of these unfortunates will reacquire the self-control, moral balance and social outlook essential to ordinary life without the stigma of magisterial action (Auden). Under institutional oversight they can be classified, treated and provided with suitable outlets for occupational training and needful recreation. The hospital should be especially adapted to their needs. "Some of these cases," says Wimmer, "may be too sane for an insane hospital but not sane enough for home care; in ordinary hospitals they have no place." Punitive measures in these patients have no deterrent effect; they serve only to increase their antisocial tendencies.

There should be an Encephalitic Guidance Clinic, with a personnel of a neuropsychiatrist, a psychologist and social workers, whose activities would include the entire state. The specially adapted hospital with its facilities for research and the clinic should be situated in a medical center. The intensive study of personality undergoing a gradual disintegration would throw much light on the sequelæ of encephalitis. Many of the disorders of personality in this disease are clearly related to demonstrable biological changes in the nervous system. The importance of this work is apparent. Chicago is devoting $275,000 to only one line of procedure—the scientific study of behavior. Drs. Bond and Partridge, at the Pennsylvania Hospital, Department for Mental and Nervous Disease, and Dr. Raynor at the King's Park State Hospital, New York, are the only ones, I believe, in this country, who are conducting notable experiments in the study of the encephalitic child. The former (Drs. Bond and Partridge) began in 1924 their investigations with a class of ten boys between the ages of eight and twelve years. These boys were intelligent and badly behaved but were free from any evidence of a gross brain lesion except strabismus. After a trial of eighteen months they report that the boys have been a manageable unit, that they made fair progress in education and that their behavior was improved. The latter, Dr. Raynor, unfortunately did not have so favorable a group for experimentation. They were of both sexes and their ages ranged up to seventeen years. Among them were Parkinsonians, non-encephalitic cases and some with a low intelligence quotient. Medical science never stands still. The spirit of smug complacence and resignation with which we have viewed mental defect no longer obtains. The percentage of hereditary feeble-mindedness is relatively small. The majority of mental defectives and the socially inadequate arise from natal and post-natal conditions. Notable among the causes is epidemic encephalitis. The mental deficiency in these acquired and accidental cases is as actual as in germ plasm defect. The significant fact is that thus far no conclusive evidence has been produced to show that these injuries can be transmitted to the germ plasm. With the removal of the hereditary menace and the recognition that the behavior disorders and the moral and mental abnormalities are phenomena radically separate and distinct from the manifestations of feeble-mindedness, our purpose, that of human salvage, is clearly apparent —a matter of tremendous importance from an economic and sociologic standpoint.

For the post-encephalitic psychoses, the various grave sequelæ, the moral obliquities, delinquency and anti-social tendencies, treatment in the home is ineffective and undesirable. Institutional care is imperative and is one of the most urgent needs of the day. The rehabilitation of these human deficients so they can earn a living, be useful to society and obtain for themselves some comfort out of life is the problem difficult. In his book "My Life and My Work," Henry Ford says that he has been able to adapt 9,163 men below average validity, to work chosen for them in conformity with the degree of their weakness—a remarkable achievement. It is this utilization of human inefficiency for which Medicine and society must work and

plan. For the salvage of the encephalitic, for the utilization of his physical, moral and mental impotency, I work and plead!

DISCUSSION

Dr. W. A. Jones (Minneapolis): The essayist has covered the field of encephalitis very thoroughly, not only quoted from the literature but from his own experience as well. Perhaps we are going too far in our enthusiasm about detecting a case of encephalitis when it is quite possible it is not encephalitis at all. I recently heard of a case diagnosed as influenzal diarrhea which turned out to be simply an ordinary case of typhoid fever. And we may be led in the same error unless we use better powers of analysis and classify our cases in better order and see that we have a history of the individual very carefully and thoroughly worked out.

At the meeting in Cincinnati the latter part of October, the Central Neuropsychiatric Association had the pleasure of hearing Dr. August Wimmer of Copenhagen. He is an authority on epidemic encephalitis and has written probably one of the most painstaking books on that subject. What interested me most was that he cited forty cases of epilepsy that he thought developed from an encephalitic condition. I presume that is quite probable, but if we are going to describe all of these so-called inherited or chronic nervous diseases as the outcome of influenza or encephalitis, we are certainly getting into deep waters. Most of these people who develop a chronic or habit disease like epilepsy, or other disorders of this type, have behind them hereditary or inherent defective conditions, which are really part of the disease, which almost any factor might bring out and that might easily be called something else.

Hence, it is very necessary that we take more careful histories of our patients. And yet it is admitted that it is very easy for the neurologist as well as the general practitioner to accept hastily the causes and effects and results of disease because he has not taken sufficient time to probe into the type of individual with whom he is dealing, or to get a clear outline of what has gone on before.

I would take issue with Dr. Riggs that backward children and the so-called defective classes are due in any way to influenzal or encephalitic states. Certainly not unless the background was carefully brought out and if nothing existed there, and there was no evidence of effect or inheritance, it seems improbable that influenza could be ascribed to precipitate the cause of this condition except in very exceptional and ill-grounded cases. Neurologists and others are very apt to think that this epidemic encephalitis is a very convenient diagnostic opportunity. But we should be extremely cautious at arriving at a definite conclusion for we know and are told, as Dr. Riggs told us, of the very peculiar and freakish things that follow epidemic encephalitis. They are peculiar and very interesting, but they can be found in patients suffering from other acute illnesses not encephalitic in origin.

NOTES ON SURGERY OF THE SPLEEN*

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It is not essential that the histology or embryology of the spleen be reviewed in detail. The spleen is the first of the hemolymph glands to appear, as a condensation of the mesenchyme in the dorsal mesentery of the stomach. It is bean-shaped, about five inches long, weighs about five or six ounces, lies in the left hypogastric region, directly beneath the diaphragm, and moves with respiration. It is a dark, purplish colored organ, presenting a smooth convex surface covered with peritoneum that is reflected at the hilum to the stomach and diaphragm, and serves to support and hold the organ in place.

The relations of spleen to stomach, pancreas and diaphragm are important in splenectomy. In the gastro-splenic peritoneal folds are found the vasa brevia, branches of the splenic arteries. The tail of the pancreas is frequently attached to the pedicle of the spleen. The diaphragm may be adherent and, if adherent, careful separation is imperative.

The pedicle carries the blood supply. The splenic artery arises from the celiac axis, gives a branch to the pancreas, a branch, the left gastro-epiploica, the vasa brevia and several other branches before entering the spleen. The veins are similarly arranged though they run a more direct course in the pedicle. The splenic vein empties directly into the portal vein. The spleen consists of, in the main, a reticular structure of endothelial material with cells so loosely arranged that the blood slowly filters through it. The arteries end near the periphery by branching. At each branch is a follicle of lymphoid tissue, the Malphigian corpuscle, an important factory for lymphocytes. Pulp cells (phagocytic, pigmented, and eosinophilic) fill the remainder of the organ. Ferments and hormones are manufactured in the spleen, and the blood pigment metabolism is influenced by the pulp cells. The spleen is looked upon as a member of the sympathetic endocrine system.

The spleen is not essential to life. This fact was recognized by the ancients. Aristotle recorded instances of a congenital absence. Pliny

*Read before the annual meeting of the Northern Minnesota Medical Association, Crookston, Aug. 9 and 10, 1926.

stated that a splenectomy was performed in his day in man and in animals. A sect of surgeons about 1700 A. D. achieved considerable notoriety by the performance of splenectomy.

INDICATIONS FOR SPLENECTOMY

Following a bitter controversy between Simon and Huchler of Darmstadt in 1855, the Surgical Society of Hesse concluded that the only indication for splenectomy was an injury to the spleen that would (but for splenectomy) prove fatal.

Collier, in 1882, compiled a study of the operated cases up to that time and concluded the operation was also justified in cases of splenoptosis, cysts, and in idiopathic enlargements of the spleen.

Moynihan, Mayo, and others have done much to clarify the situation. They have concluded that splenectomy is indicated as well in early selected cases of pernicious anemia, splenic anemia, hemolytic jaundice, and in selected cases of Gaucher's disease. Splenectomy has been found beneficial in certain cases of malaria and tuberculosis.

Kaznelson in 1916 first advised splenectomy for thrombocytopenic (formerly called idiopathic) purpura hemorrhagica, which is sound advice only in the chronic cases.

Besides these conditions there are those such as embolism and thrombosis of the splenic and portal system that require mention. These are found more frequently at operation than are diagnosed before operation.

CONTRAINDICATIONS

Even though the spleen may be dispensed with, it was found that splenectomy was not the panacea for all cases with enlarged spleen. The failure in all forms of leukemia was recognized early. Polycythemia, Still's disease (of children), cirrhosis of the liver, and late cases of pernicious anemia do not respond to splenectomy. Certain cases of syphilis and malaria are better treated medically. Splenectomy has no place in kala azar, pseudoleukemia infantum, rickets, or Hodgkin's disease. Splenectomy had better be deferred in the acute cases of thrombocytopenic purpura hemorrhagica. These lessons have come from sad experiences. Splenectomy has been tried without success.

The following conditions may simulate at first an enlarged spleen, and have appeared under postoperative diagnosis: kidney or perinephritic tumor, suprarenal tumor, carcinoma of splenic flexure, pancreatic tumor (as cyst or carcinoma), gastric malignancy, ovarian tumor, tuberculous peritonitis, and, the most meek and lowly of all, fecal impaction.

DIAGNOSIS

The following notes as to diagnosis may be of value in recognizing a condition in which splenectomy is indicated. Wherever this procedure is indicated it is often a wonder-working accomplishment. When performed where not indicated it will often unduly hasten a fatal termination of the disease.

In injury there will always be either a wound, or history of an injury, with evidence of hemorrhage, external or internal, and with the signs of shock, pain, tenderness, and rigidity over the affected area. Immediate operation is indicated.

Splenoptosis is found often in multiparous women, is recognized as a movable, wandering tumor with a notch. The symptoms may closely simulate those of an ovarian cyst, especially those with twisted pedicle. Splenoptosis with twisted pedicle may lead to a surgical emergency and must so be treated.

The various infections, such as echinococcus, tuberculosis, syphilis, abscess, malaria, and the like, must be diagnosed from the history, physical findings of each particular disease, with pain, tenderness and tumor that point to a localization in the spleen.

Tumors are usually diagnosed after exploration, and exploration is always justified in case of tumor of the spleen that cannot be definitely assigned to other etiology.

The picture of pernicious anemia is too well known for much elaboration, but a careful blood study must be undertaken to make the diagnosis. Splenectomy in early cases with repeated transfusions and other medical treatment to follow the operation promises to lengthen the expected span of life, in an otherwise almost hopeless condition.

Splenic anemia (Banti's disease) is characterized by a chronic progressive course, without remissions, a slowly progressive splenomegaly, that includes fibrosis of the reticulum, thickening of the capsule, and enlargement of the vessels. The anemia is secondary in type, with leukopenia. There are hemorrhages of various kinds. The liver becomes involved late in the disease. There is slight icterus, if any, and the lymphatics are not involved.

Hemolytic or acholuric jaundice is due to dysfunction of the reticulo-endothelial system of the spleen; hence splenectomy cures the condition. In the familial type the jaundice is chronic, slight, acholuric, dating back to infancy in many cases. The gallbladder participates in 60 per cent. The spleen is enlarged without being tender. Anemia is secondary. The characteristic change in red cells is increased fragility. In the acquired type the picture is different, acute, deep jaundice, severe anemia, with pain and fever.

Thrombosis of the splenic vein is associated with splenomegaly and hematemesis.

Gaucher's disease is a chronic affection of childhood, with slight anemia, rarely icterus, markedly enlarged spleen and slightly enlarged liver. The red cells are normal. The major part of the lesion is in the spleen, but splenectomy does not remove all of the lesion.

Thrombocytopenic purpura hemorrhagica, is not inherited, is seen in women frequently, is characterized by repeated petechial hemorrhages without trauma, prolonged bleeding time, normal clotting time, non-retraction of the blood clot, and low platelet count, and deformed platelets. The acute stage of this disease does not respond to splenectomy, and this must be recognized. There is without warning a severe uncontrollable oozing from the mucosa into the tissues with hematemesis, hematuria and bloody stools. Remember here that repeated transfusions will control this acute stage; splenectomy will cure when the acute condition subsides.

DIFFERENTIAL DIAGNOSIS

Pernicious anemia may be confused with the hemolytic anemia of pregnancy, the parasitic hemolytic anemias, gastric carcinoma, chronic poisoning by carbon monoxide, lead or arsenic and hemolytic jaundice.

Splenic anemia may be confused with the manifestations of gastric or duodenal ulcer, cirrhosis of the liver, syphilis of the liver or spleen, and chronic obstruction of the splenic vein.

Hemolytic icterus is at times closely simulated by pernicious anemia.

In thrombocytopenic purpura hemorrhagica one must differentiate between the acute and chronic stages. One should also think of and carefully differentiate this condition from acute aplastic anemia, aleukemia, leukemia, bone marmor tumor, pernicious anemia and hemophilia because of the poor results that will follow the splenectomy in these later conditions as compared with the beautiful results following splenectomy in thrombocytopenic purpura.

SPLENECTOMY

We prefer to stand on the patient's right side, because from this side we obtain a better view of the pedicle, the ligation of which is the most important step in the operation.

Step 1.—With very few exceptions our incision is the so-called transverse, cutting across the abdominal wall below the costal arch, beginning to the right of the median line (linea alba) cutting through the skin, superficial fat and fascia down to the fascia of left rectus muscle, cutting this muscle transversely, down through the transversalis fascia and muscle. The peritoneum is freely incised in a similar direction.

Step 2.—Through the above incision the isolation of the spleen is usually simple, though at times it may be rather troublesome. The wound retracts easily, and with the right hand one will be able to palpate the spleen and in fact may be able to visualize splenic adhesions with the aid of a well placed retractor and a good reflected light. It may be impossible to liberate the spleen when it is fused to the surrounding structures, and consequently further procedure will be contraindicated. When adhesions even though firm and intimate can be separated, the operation may be continued, taking care that no injury be done the spleen even at the expense of slight abuse or trauma to the abdominal wall or diaphragm. All adhesions which may contain blood vessels must be doubly clamped or ligated before division. When the spleno-phrenic ligament is vascular it must be separated into several bands or sections, doubly ligated and divided. If the spleen is grasped with a piece of gauze over the glove one will be able to draw the spleen down so as to note the position of the adhesions. It is advisable to liberate the phreno-splenic ligament first and then attack the adhesions which may be holding the spleen in its bed. Adhesions to the colon, stomach and to the tail of pancreas must be looked for and treated as may be indicated.

Step 3.—After all adhesions both normal and abnormal have been separated the organ is delivered from the abdominal cavity and turned toward the left side of body so as to better expose the internal or under surface of its pedicle. By careful manipulation and separation, the vari-

ous vessels in the pedicle are doubly ligated and divided beginning caudally and working upwards. This separation of each vessel in turn is a very delicate procedure and each ligature must be placed with care, so as not to tear the vessel and yet ligate tight enough to prevent hemorrhage. Care must also be used by the assistant in supporting the spleen and in preventing its sudden displacement. As few instruments as possible should be used in separating the vessels, preferably using the fingers and blunt ligature carriers rather than needles. Remember especially that the splenic artery and vein may be difficult to find because of the tail of the pancreas to which they are often adherent. If such should be the case throw a ligature around the whole mass and then ligate each vessel separately after section.

Step 4.—Now examine the whole operative field, pick up any bleeding point wherever possible with forceps—otherwise use a small needle and catgut. Look especially for bleeding on the diaphragm by retracting the stomach and intestines.

Step 5.—We always leave a small cigarette drain in the cavity of the spleen on closing the abdominal wall. We suture the peritoneum and fascia with a No. 2 catgut. The muscle we do not suture except with two stay sutures which we pass through the body of the muscle above and below our line of incision. No. 1 catgut is used for the skin. The contraindications for splenectomy from a surgical standpoint must be considered and the foremost in this classification is probably adhesions which cannot be separated without undue risk to the patient.

POSTOPERATIVE SEQUELA

There are certain clinical events that one may expect to encounter after splenectomy. They include a two or three day illness that may cause some alarm. The fever may rise to 103 though most often it is around 101. There is considerable loss of weight during this spell. The pain in the long bones of the legs may be rather pronounced. There is usually a decided fall in the red cell count for a few days with leucocytosis and temporary superficial adenopathy is often noted. These symptoms and signs should subside within three or four days and from that time an uneventful convalescence ensues.

CASE REPORT

Miss A. N., a student, aged 16, and a native of Minnesota, was seen March 4, 1926.

Family History.—Normal birth and a normal childhood. Mild influenza in 1918; no accidents; no untoward habits.

Present Illness.—Epistaxsis, excessive, frequent, spontaneous, of three days duration, every seven to eighteen days for the past four months. Slight indigestion; no hematuria; premenstrual backache. Glasses cured headaches five months ago. Packing nose has been necessary to control epistaxsis. Areas of redness have appeared and disappeared on the skin; loss of strength and weight noted lately. Menses have been regular and normal except that she has been flowing for the past two weeks steadily.

Physical Examination.—White girl, pale, anemic, apathetic; skin shows many areas of petechial hemorrhages; blood pressure not taken for this reason; temperature and pulse normal; thyroid slightly enlarged; heart and lungs normal; abdomen negative; some pyorrhea; hemorrhages about joints; is menstruating.

Laboratory Findings.—No urinalysis made (menses). Blood: Hb. 60 per cent.; r.b.c. 3,400,000; platelets 45,000; w.b.c 10,950; s.l. 13 per cent, l.l. 19 per cent; e. 4 per cent, p.m.n. 56 per cent, l.m. 8 per cent, a few immature lymphocytes present, slight poikilocytosis, few normoblasts and some polychromatophilia. Coag. 5.5 minutes, bleeding time 6.5 minutes, Group II.

Diagnosis.—Thrombocytopenic purpura hemorrhagica; possibly aleukemia.

Treatment.—Mar. 6, 1926: Blood transfusion of 490 c.c. in vein; 20 c.c. intramuscularly; calcium chloride, coagulen. Blood: Hb. 48 per cent; r.b.c. 2,520,000; platelets 71,000; hemorrhages stopped.

Operation.—Mar. 9, 1926: Platelets 45,000; bleeding time 2 min; clotting time 2.5 min. Splenectomy, spleen adherent to colon and diaphragm; oozing ceased upon removal of spleen prior to suturing abdomen. Weight of spleen 250 grams.

Postoperative.—Uneventful convalescence except for fever and leukocytosis. Platelets 400,000 on Mar. 12, 1926. Home Mar. 27, 1926.

Follow-up.—April 19, 1926: Gaining weight and strength, color improving, feeling very well.

The pathologist's report from the University laboratories contains the following notations: "The spleen weighed 250 grams, against a normal weight for the age of about 125 grams. The microscopic picture is quite variable. The follicles are definitely enlarged and the pulp is of quite a lymphatic structure although there are areas which seem to be definitely myeloid, perhaps representing myeloid metaplasia. These areas consist of myelocytes, both eosinophilic and neutrophilic and of polymorphic forms of the same variety. This in itself is suggestive of leukemia. Another suggestive fact is that many sinuses are filled with white blood cells, some of which are leukocytes, some lymphocytes, and there are others which are apparently free reticuloendothelial. * * * In the blood smears are found occasional myelocytes. These might be present in leukemia but they might also represent simple bone marrow stimulation, especially in a young individual. The few platelets seen were very large. This undoubtedly represents stimulation of the megakaryocytes."

DISCUSSION

Dr. Benjamin F. Davis (Duluth): In my discussion of this excellent paper, I shall confine myself to what is practically a new indication for operation on the spleen, namely, aneurysm of the splenic artery or its branches. This was emphasized by Baumgartner and Thomas,* who found that, of forty cases of aneurysm of the splenic artery reported between the years 1847 and 1923, six had been operated on with four recoveries. Thirty-three of the cases were diagnosed at necropsy. In most of these, death was directly due to the aneurysm. Many had had symptoms of abdominal pain or distress, enlarged spleen, and gastro-intestinal hemorrhage; a few had epigastric tumor with murmur. In most of them, the diagnosis was indefinite. With the symptoms of abdominal pain, gastro-intestinal hemorrhages, splenic and epigastric tumors, and roentgen-ray studies ruling out tumors of the stomach, aneurysm of the splenic artery should be considered and operation advised, for in operation lies the only hope of recovery in these cases.

I present herewith a specimen removed at operation in October, 1924. This case was reported in the A. M. A. Journal, Jan. 17, 1925 (page 200). The patient was a man, aged 67, who had a movable, painless mass in the left side of the abdomen at about the level of the umbilicus, first noticed two days before, and without other signs or symptoms relevant to it. The mass was about 10 cm. in diameter, did not fluctuate, was easily pushed up beneath the rib margin, and promptly came down again when the patient stood up or inspired. Pulsation, thought to be transmitted from the aorta, was present. Under the fluoroscope, the mass was found to lie above the transverse colon and below the stomach. The blood Wassermann reaction was negative. The family history was without bearing on the case. A diagnosis of probable tumor of the mesentery or spleen was made.

Under ether anesthesia, a left rectus incision was made, which disclosed an aneurysm of the splenic artery presenting through the lesser peritoneal cavity, displacing the tail of the pancreas forward and medial. Expansile pulsation became evident after the wall of the aneurysm was exposed. The afferent and efferent portions of the splenic artery were ligated, and the aneurysm was removed intact. The abdomen was closed in layers without drainage. Convalescence was uneventful. Laboratory examination revealed a saccular aneurysm, 10x8x9 cm. size, with extensive mural thrombosis.

In the case here reported, the only sign was that of tumor; expansile pulsation was not recognized as such until the lesion was exposed.

Treatment: Three procedures are suggested: (1) ligation, (2) ligation and excision, (3) splenectomy. The choice of procedure will be governed by the location of the aneurysm, the condition of the patient and the condition of the spleen, especially with regard to adhesions which might make the operation of splenectomy dangerous. Although apparently the spleen may be deprived of its arterial blood supply and left to undergo aseptic necrosis and absorption with safety, probably splenectomy is indicated especially in cases of aneurysm at the hilus or within the substance of the spleen; but even then, while desirable, it is not essential.

*Surg., Gyn. and Obst., 39:462 (Oct.), 1924.

THERAPEUTICS—ANNO DOMINI 1925

A few pseudo-medical journals still eke out a precarious living by selling their advertising pages to nostrum exploiters who cannot obtain space in reputable medical journals. One of these survivals is the *Archives of Therapeutics*, published by the Archives of Therapeutics, Inc., 243 Fourth Ave., New York City, which gives on its title page the names of Carl P. Sherwin, M.D., Sc.D., LL.D., as editor, Benjamin Harrow, Ph.D., as managing editor, and of fifteen associate editors, some of whom are men of unquestioned professional standing. In the November, 1926, issue are thirteen and three-quarters pages of advertisements of nostrums, the great majority of which are not only unacceptable for "New and Non-official Remedies," but have also been at one time or another the subject of critical reports. Some of these are: Abican, Agarol, Anasarcin, Antiphlogistine, Campho-Phenique, Cactina Pillets, Chionia, Echthol, Gray's Glycerin Tonic, Hexaret, Hyperol, Pasadyne, Phillips' Phospho-Muriate of Quinine, Peacock's Bromides, Pineoleum, Prunoids, Sal Hepatica, Sanmetto. In addition to this list there is a full-page advertisement of "Orchaphrin Tablets" and "Ovaphrin Tablets," described as aphrodisiacs for men and women respectively. They are said to be mixtures of yohimbine hydrochloride, extract of nux vomica, sodium nucleinate, pituitary, thyroid and suprarenal substances, and to differ only in that the "Aphrodisiac for Men" contains, in addition to the products listed, orchic substance, while the "Aphrodisiac for Women" has ovarian substance.

This number also contains a "Ready Reference Index" listing 120 pathologic states and giving 300 recommendations of proprietary remedies for their treatment. (Jour. A. M. A., Dec. 11, 1926, p. 2017.)

THYROID IN OBESITY

Reduction of weight should not be undertaken by means of thyroid alone. Dietary procedures form the basis of all scientific and rational reduction methods. In some instances, when diet will not suffice, thyroid may be used. When prescribing the drug, physicians should make certain that they will be supplied with the U. S. P. product and small doses should be given at the beginning, watching the pulse and nervous system. Thyroid is always a double edged sword and must be used with caution. (Jour. A. M. A. Dec. 18, 1926, p. 2114)

CURRICULUM OF A TECHNICAL SCHOOL: MEDICINE*

E. P. Lyon, Ph.D., M.D.

Dean of the Medical School, University of Minnesota
Minneapolis

A technical or professional school differs from an Arts College in the more definite specification of its product. It is like a factory making a special and peculiar product. Everything about such a factory is adapted to the end in view. Nevertheless a considerable variety can exist in the methods employed and in the order of procedures, and a good deal of doubt can prevail among experts as to the materials, relative strength and importance of the elements used and the design of the various parts that will produce the best final product.

Of course the chief product of a medical school is doctors. Everyone admits that, and every honest school wants to turn out good doctors. But there is considerable variety in the specifications which are written by experts as descriptive of a good doctor, and there is variety in the methods advocated for producing a good doctor to fit any given specification. Here are some specifications:

By Doctor Vaughan (I quote from memory): "Medicine is the application of certain parts of biology, chemistry and physics (I add psychology), to the diagnosis, treatment, alleviation and prevention of human disease."

Here is one that I drew up several years ago:

"A good doctor is a keen observer. We must train the powers of observation in our students. We may say that there is a technic of observing and that we must teach this technic.

"A good doctor is a trained experimenter. That is, he combines control of conditions with observation. We must train our students in experimental methods in the laboratory and at the bedside. This is technical training.

"A good doctor is a skilled technician also in another and narrower sense of the word. He knows how to do certain things connected with the practice of his profession, things requiring accuracy of hand, eye and ear. We must train our students in the technic of their profession.

"A good doctor is a man of judgment. He must be able to draw correct conclusions from observations and experiments. He must be able to synthesize isolated elemental facts into a unified compound. We express this idea when we say he must be able to think.

"A large part of our teaching is devoted to giving students what we consider valuable thought-stuff; facts we call it. We also give them numerous examples of thinking—ready-made combinations of facts or so-called conclusions. This is well. . . But when it comes to making new thoughts, the only way is by practice and repetition and habit. We can help another man's thinking chiefly in the same way that we can help his drawing or his chemical analysis or his physical examination, namely, by stimulating his interest, by showing him where he fails and by teaching him to criticize his own work, as he would any other technical achievement.

"Finally, the good doctor is a man of character, which means again, I suspect, only that he has on hand certain kinds of brain-stuff, makes certain kinds of associations of it and reacts in certain ways to these associations. Here, again, example and criticism are the basis of teaching. A good doctor is skilled in the technic of right behavior. He makes mistakes in ethics no more than in counting blood-corpuscles."

More recently I have come to think of the good doctor in another way; he is, let us say, fifty per cent scientist and fifty per cent technician; but he is one hundred per cent something else, for which I can find no better word than "minister." People go to the doctor to have their fears allayed, their hopes stimulated, their confidence in themselves and their universe reestablished. They go for sympathy. Pain is an affair of the mind and they go to have it removed or diminished. The quality that makes the doctor successful in meeting these demands is not measured entirely by his scientific knowledge, technical skill and moral character. Some people might call it salesmanship, but I am not thinking of the financial side. That will take care of itself if the doctor really possesses the power I am trying to describe.

Unfortunately our curricula do not recognize this part of the specification. We leave it out of the contract. We do not know how to take it into account either in selecting or training our students. Perhaps this is the weakest feature of medical education. Perhaps some day the psychologists will tell us how to select men who have this quality. Then our average product will be improved.

*Read before the Seminar on Advanced Education, College of Education, University of Minnesota, April 19, 1926.

The differences of opinion regarding both the specifications and the methods are chiefly as to the importance of so-called practical knowledge versus scientific knowledge, or the relative importance of ability to do and power to understand. In another way the controversy may be expressed as art versus science.

Science is supposed to give the power to understand. Work in hospitals and dispensaries, helping in the care of the sick, repetition of approved technical procedures under a variety of conditions, and consequent development of judgment as to the circumstances under which these procedures should be employed are supposed to develop the ability to do or the art of medicine.

It will be seen that these somewhat antagonistic points of view are typified partially by the laboratory versus the clinic. This was true much more in the past than it is now. They are also exemplified by two entirely different historical backgrounds in medical education.

On the one hand is the evolution of medical education as it took place in the European universities, particularly in Germany. The medieval universities were essentially centers of philosophy and logic. They were interested in expounding authority and not in fostering research into objective phenomena. The doctor's degree was established on a purely scholastic basis. Practice was considered menial. Surgery was done by barbers. The professor would not dissect. Pictures of early dissections show the servant doing the actual work, while the doctor pointed out the structures with a wand and expounded Galen.

This ideal persisted very late. In the armies of Frederick the Great the surgeon ranked just above the drummer, and he shaved the officers. When Helmholtz graduated in 1842 his thesis was on the cutting of tumor, but he had never seen the operation. Logic as a required subject in the German medical curriculum was not discontinued until about 1857.

The hospitals in early times were quite apart from the universities, and they still are in France. In Leyden in 1630 clinical instruction was instituted in the medical faculty, but the students objected and it was given up. It was revived by Boerhaave, who became professor at Leyden in 1709. This time clinical instruction as a University discipline survived in Holland. Van Swieten, a pupil of Boerhaave, was called to Vienna by Maria Theresa in 1745, and with that date the great clinical school of Vienna may be said to have begun. The German laboratories grew up in connection with the university in the nineteenth century. The first in anatomy was Breslau, 1814; in physiology, Breslau, 1824; in physiologic chemistry, Giessen, 1825; in pharmacology, Dorpat, 1849; in pathology, Berlin, 1856. Note that our present ideals of medical education of university type are hardly a century old.

In Germany the great progress of science in the nineteenth century affected and was affected by the laboratories and clinics alike. Both were in and part of the university. Students progressed systematically through the sciences into practical work. The professors of practice came up through the laboratories and were chosen because of scientific distinction.

In France and England the medical schools grew up around the hospitals, and to this day in England a degree is not necessary for practice. The students "walked the hospitals" with the doctors, and got their anatomy, chemistry, etc., on the outside in any way they could. The result was preeminently a practical profession, with but little tendency to advance on the scientific side. Gradually the hospital schools developed departments of anatomy, physiology, etc., but even now these schools are dominated by the clinical side, although something like a curriculum has grown up.

In what is now the United States the first medical school was founded in 1765 at Philadelphia and became the Medical School of the University of Pennsylvania. In New York, medical instruction at King's College, now Columbia, dates from 1768. Harvard Medical School began in 1783 and Yale in 1810.

The distinguishing feature of American Medical Education was the proprietary school, the first of which at Baltimore dates from 1807. Flexner thus describes this type of school:

"A third type, already so discredited as to have become absurd, is associated with the New World, where an unprecedentedly rapid expansion of population over an enormous territory created a demand for doctors long before there existed facilities for their proper training or means for their proper support. The inevitable happened. Loose and shifting bands of practicing physicians, calling themselves a faculty, tried to impart, chiefly by lectures, to heterogeneous, uneducated groups of students the empirical knowledge, sound and unsound, which they themselves possessed. First and last, American towns have produced over four hun-

dred such medical schools. The teaching of medicine on these terms was, directly, in cash, and indirectly, in prestige, a profitable business. In time the medical profession—to its credit be it said—undertook itself to set its own house in order, and with such marked success that schools of this extreme type have within the last decade practically disappeared. But consequences of the educational chaos in which for seventy-five years the country and the medical profession were involved are still in evidence. Pioneer conditions explain how the physicians of that day came to manufacture, by the thousand, doctors who had had small chance to acquire either knowledge or skill. The medical profession now knows better; but large sections of the people have not yet unlearned the bad lesson they were then taught; so that medical sectarians employing a technic compounded of illusive promises, bragging, and advertising, operate profitably on a scale that would have amazed, perhaps even shocked, the regular profession in the heyday of proprietary medical education."

The Schools of Harvard, Columbia, Pennsylvania, etc., at first University schools, became in reality proprietary institutions. They were run by their faculties and almost wholly on the fees of the students. The proprietary school was founded by and revolved about a dominant personality, usually a surgeon. Here at Minnesota his name was Millard, a man above the average of this type. In a given city the founding of a school by one group of doctors was the sure stimulus to the founding of another by a competing and rival group. Thus as many as thirty-nine schools were founded in Chicago, twenty-one in St. Louis, and four or five here in the Twin Cities.

In Missouri, at the time I was in St. Louis University, and perhaps even now, all that was necessary to obtain a charter and the right to give degrees was a petition by five men to the State Supreme Court. They did not need to demonstrate any ability, financial nor intellectual; and no legal supervision or restriction of their activities was provided. The culmination of this was the recent scandal over the traffic in diplomas by the College of Physicians and Surgeons, St. Louis—a scandal which resulted in the revocation of about 150 licenses in Connecticut.

In the American proprietary school at first there was no curriculum. There were no preliminary requirements, except that the candidates were supposed to have studied with a preceptor. A two year course of lectures was required for the medical degree, but the senior course was a repetition of the junior course. The seniors had a right to the front seats in the amphitheater. That was the only difference between the two years. Limited and precarious dissection was about the only laboratory study.

The first three year course was organized at Northwestern in 1859 and this advance gradually became universal, at Harvard, for example, in the early seventies. Later the four year course became universal, chiefly through state license requirements. This course was graded, the laboratory subjects filling the first part.

There were many efforts toward improvement. There was improvement in individual schools. But the system itself survived at its worst until 1910. No real standard of preliminary education was required in many schools. They had no adequate laboratories or clinics. Students were obtained by flamboyant advertising. The terms of attendance were short. There were no standards of any kind. Diplomas could be purchased without any study requirement, if one knew where to go and had the money. I knew of instances where freshmen flunked out at St. Louis University the first semester and received their degrees at another college the same spring. This took place as late as 1906. About 1902, while at Rush, I was sent to Indianapolis to investigate an eclectic medical college. I found it quartered in two small rooms over a feed store. The only furniture consisted of a blackboard, a few chairs, and two tables, on one of which a cadaver may sometime have rested. This was an extreme case, but even Harvard did not have microscopes for student use until 1870.

The astonishing change in American Medical Education which has taken place in fifteen years was not the result of any one cause, unless that cause may be said to have been the unsatisfactory condition which existed. On the whole the reform may be said to have been originated and carried out by the medical profession itself, but chiefly by a few leaders and the medical educators. High lights in the movement were: (1) the founding of the Johns Hopkins Medical School in 1893; (2) the work of the Association of American Medical Colleges; (3) the requirements of the State Examining Boards, although these tended to follow rather than precede progress in the schools themselves; (4) the Council of Medical Education of the American Medical Association dating, I think, from 1904; and (5) the Report of the Carnegie Foundation in 1910—the so-called Flexner report. This last

A

FRENCH CURRICULUM (Suggested)*

Mornings	*Afternoons*
1st year	Winter—Anatomy
Clinics in medicine and surgery	Summer—Histology and physiology
2nd year	Winter—Anatomy
Clinics in medicine and surgery	Summer—Histology, physiology, chemistry
3rd year	Winter—Bacteriology, pathology
Clinics in medicine, surgery and obstetrics	Summer—Operative surgery, parasitology, pathology
4th year	Winter—Pathology
Clinics in specialties	Summer—Materia medica and pharmacology
5th year	Winter—Neurology, hygiene
Clinics in pediatrics, infectious diseases, etc.	Summer—Psychiatry, legal medicine

GERMANY: Suggested order of studies in one University.

1st semester:	Osteology, zoology, physics, chemistry.
2nd semester:	Anatomy, physics, chemistry, botany.
3rd semester:	Anatomy, histology, physiology, chemistry.
4th semester:	Anatomy, physiology, physiological chemistry. Examination in basic and preclinical sciences.
5th semester:	Anatomy, physiology, physical chemistry.
6th semester:	Pathology—general, special, and experimental; auscultation and percussion; pharmacology; propaedeutic medical clinic and general surgical clinic.
7th semester:	Pathology, auscultation and percussion, clinical microscopy; medical, surgical and obstetrical clinics and lectures.
8th semester:	Pathological anatomy and histology; medical, surgical, obstetrical clinics; lectures in psychiatry.
9th semester:	Medical, surgical, obstetrical, psychiatric, pediatric, and special clinics, hygiene, serology.
10th semester:	Special clinics; hygiene; legal medicine. Final examinations followed by practical year.

ENGLAND: Old Curriculum.

1st year:	Chemistry, physics, zoology.
2nd year:	Anatomy, physiology
3rd year:	Winter—Anatomy, physiology, materia medica. Summer—Pathology, medicine, surgery.
4th and 5th years:	Clinical subjects in different orders.

"The curriculum in Great Britain is, however, now planned on the basis of six years' study of which two and a half are to be devoted to the medical sciences and three and a half to the clinical subjects."

B

UNITED STATES: Two premedical years including biology, chemistry and physics.

1st year:	Anatomy, physiology, physiological chemistry.
2nd year:	Physiology, bacteriology, pathology, pharmacology, physical diagnosis.
3rd year:	Obstetrics, medicine, surgery, clinical microscopy, pathology.
4th year:	Medicine and surgery, including clerkships, specialties, etc.

*These curricula are quoted from Flexner, Medical Education, 1924.

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was supported and carried on by an outside agency, but it was the American Medical Association Council which influenced the Foundation to undertake the task. So I think I am correct in saying that the ills of medical education were healed from within.

The movement of reform has gone forward with extreme rapidity. In place of 180 medical colleges existing in 1910 we have less than ninety. Almost all are *bona fide* parts of universities. Almost all are honest institutions. All require two years of college work, with considerable preparation in science, preliminary to enrollment. Nearly all have reasonably good laboratories and some clinical facilities. The best are as good as any in the world. The change is astounding.

I have introduced the historical matter on account of the effect of history on the curriculum, from which topic I have perhaps been diverted too widely.

Another fact which influences the medical curriculum may be thus stated, quoting Dr. Welch:

"It is impossible to impart the entire contents of medical and surgical science to the student. You cannot even impart the contents of any single subject in the curriculum. The most you can expect is to give to the student a fair knowledge of the principles of the fundamental subjects in medicine, and the power to use the instruments and the methods of his profession; the right attitude toward his patients and toward his fellow-members in the profession; above all, to

put him in the position to carry on his education, because his education is only begun in the medical school, and therefore our aim should be to enable him to complete his education, which goes through all the remainder of his life."

I may add that where there is so much to teach and so little time, much difference of opinion develops as to the relative value of the various subjects, and every department keeps demanding more hours. Moreover new subjects arise and demand time. Just now Physico-therapy and Medical Economics are such subjects.

I think we have already overloaded the curriculum. We have tried to teach everything. We have not been content with Prof. Welch's advice —"a *fair* knowledge of the *principles* of the *fundamental* subjects." Italics are mine.

We will now take up the actual sequences of studies at present in use and comment on the supposed strength and weakness of each.

The accompanying Chart A gives the approximate curricula of French, English, German and American schools. In the case of the European institutions these are advised or suggested arrangements only. The student can take his work in any order he wishes, subject only to the examination ordinances. In America the curriculum, somewhat varied from the sample, is usually rigid.

The French curriculum is what is called a vertical arrangement. Scientific work and clinics are mixed from the start. This follows from the historical development in France, which I have sketched.

The British, German and American curricula are of the horizontal type, science training (for the most part) in the first two (or three) years and clinical work in the last two or three years. In England this is called the "block" system. In England and Germany there are comprehensive examinations between the two blocks. In America usually the system of course examination prevails,—swallow, regurgitate and take the next meal! I sometimes call it the mile post system, or the hurdle system,—no runner cares for the mile post or the hurdle after it is passed.

The French or vertical system is criticized on the ground that the student is thrown into clinical work without foundation; that he "gets his impressions of health and disease quite higgledy-piggledy"; that the instruction is handicapped by the presence of beginners along with more advanced students, and that the students sacrifice the scientific for the practical side. The preemption of the best part of the day by the hospital work shows the historical development and the traditions attaching thereto.

The horizontal systems are criticized on the ground that the student lacks the interest in the sciences that would be aroused by a certain amount of acquaintance with the practical aspects of medicine; that the normal cannot be understood without the abnormal and indeed presupposes the latter; that the students forget a large part of their scientific training before they put it to use; and that they fail to correlate the two parts of the curriculum, that is, fail to apply their scientific training in their practical work. The last criticism is really a criticism of the clinical instruction and is being corrected as we get into clinical chairs, men really trained in science.

Well, "you pays your money and you takes your choice." I can only say that neither the vertical nor the horizontal system has ever been put to the test of impartial experiment. Medical education is full of problems which would lend themselves to modern methods of educational research.

One matter which has not been tested scientifically is the allotment of time among the various subjects. For some years there was a tendency in America to standardize the allotments. The American Medical Association worked out a recommended standard curriculum to consist of four thousand clock hours divided in approximate percentages among the different departments. The Association of American Medical Colleges has adopted a similar curriculum, with fairly liberal variations permitted in the percentages. While these helped perhaps to raise the standard of some schools and helped others to get rid of the extravagant "rights" in dominant departments, on the other hand these curricula have tended to get into state board requirements and even into the statutes, thus hampering experiment in curriculum making. On the whole the feeling is in favor of much more freedom in the matter of distribution of teaching among departments. The Association of American Medical Colleges has voted to give members freedom to experiment with the curriculum, even if in so doing they deviate from Association rules.

I am a real iconoclast on this topic. No one knows just how much anatomy, how much physiology, how much medicine, how much surgery is

best for the average student. Everyone knows that the amount best for one student might not be the best amount for another student. Everyone recognizes the tendency of every teacher to overemphasize his own branch and teach too much detail. Everyone knows that these divisions of knowledge are arbitrary and overlapping and that what a student fails to get in one place he may pick up in another. I have only one obsession and that is to keep the required or assigned hours of each department as low as possible and permit the student as free an election as a fearless juggling of rules will permit.

There has been a growing feeling among American faculties that the rigid division of the curriculum into two years of science and two years of clinical training is a mistake. This feeling is reflected in the almost universal introduction of physical diagnosis in the second year, with, in some cases, introductory clinics or lectures in medicine and surgery, and even elementary clinics in the freshman year.

A good many American educators believe that our curriculum is weak in another and more important respect. They think it is too rigid and that the student has too little responsibility as to the subject matter and order of his education. As I have indicated, I am firmly of this belief and have dubbed our system the grooved rail method of education. Our students are so restricted by the class system, sequence, prerequisites and a filled schedule of required hours that they have no choice but to go forward or be run over.

"Theirs not to reason why
Theirs but to do or die."

As I have indicated, the European curricula are suggestive only. In point of fact students deviate widely from the suggested schedules; and the rigid class system of our schools is unknown. Students move freely from one university to another. Many and not by any means the poorest students take a year or more beyond the minimum time. In England the good man uses this time to take "honors" in some subject, or to get the M.D. (not necessary for practice), or to make membership in the Royal College of Physicians.

Here at Minnesota we have done a good deal to break up the military alignment and our schedules are much less rigid than in most American medical schools. We began twelve years ago by shortening our required courses and introducing electives in the sophomore and junior years. Tuesday and Thursday afternoons are supposed to be free from required courses and at this time are scheduled a fair number of advanced and special courses. It is hard to get students to take elective work as seriously as they do the more lengthy required courses, but here at least the students have a choice as to what they will do and that means a personal responsibility. A fair number become interested in one or another department, discontinue their medical work three or more quarters and get a master's degree. Our close association with the graduate school fosters this wholesome movement. A few go on to a Ph.D. The fellowship system helps, and so does the summer quarter. I feel free in asserting that we have here a real school in the fundamental sciences, and not merely adequate departments through which students race as rapidly as possible into the clinical years.

Sometimes I feel that we need much more flexibility and freedom. Sometimes I want to kick the curriculum into the river. Sometimes I want to connect myself with the institution which Professor Howell is going to found as soon as he makes a few million dollars in the teaching profession, a school in which there shall be no admission requirements, no curriculum, no examinations, no degrees—and by inference, I should say, no Registrar and no Dean.

I do feel that we might well shorten our required courses still further and offer still more time for electives. At Minnesota we have had for two years an "Honors Course" with maximum freedom of election. No one as yet has elected this course. Most of the students, I suppose, will go with the herd anyway. Perhaps they go that way in Europe more than appears on the surface. Perhaps responsibility and freedom are a delusion. I do not know and am waiting for the research men of the College of Education to find out, if they can.

LITERATURE

The facts in this paper were derived chiefly from the following sources:

Flexner: Medical education in the United States and Canada. Carnegie Foundation Report, 1910.

Flexner: Medical education in Europe. Carnegie Foundation Report, 1912.

Billroth: The medical sciences in the German universities. Macmillan, 1924.

Flexner: Medical education. Macmillan, 1925.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

CUTTER LABORATORY
Diphtheria Toxin-Antitoxin Mixture 0.1 L^1.

ELI LILLY & COMPANY
Cholera Vaccine, Prophylactic
Plague Vaccine, Prophylactic
Old Tuberculin Human Strain Concentrated
Pirquet Test
Tuberculin Ointment for the Moro Percutaneous Test
Tuberculin T. R. Concentrated Human Strain
Tuberculin B. E. Concentrated Human Strain
Tuberculin B. F. Concentrated Human Strain
Ampoules Glucose (Dextrose U.S.P.) Lilly 10 Gm., 20 c.c.
Ampoules Glucose (Dextrose U.S.P) Lilly 25 Gm., 50 c.c.

H. A. METZ LABORATORIES, INC.
Gynergen
Ampules Gynergen, 1.1 c.c.
Tablets Gynergen, 0.001 Gm.

PARKE, DAVIS & COMPANY
Bismuth Salicylate in Oil-P.D. & Co.

WINTHROP CHEMICAL COMPANY
Tutocain
Tablets Tutocain No. 1 (with epinephrin) 0.03 Gm.
Tablets Tutocain No. 2 (with epinephrin) 0.03 Gm.
Tablets Tutocain No. 3, 0.03 Gm.
Tablets Tutocain No. 4 (with epinephrin) 0.05 Gm.
Tablets Tutocain No. 5, 0.1 Gm.

TRUTH ABOUT MEDICINES

Tetanus Antitoxin for Human Use (New and Non-official Remedies, 1926, p. 333).—This product is also marketed in packages of one syringe containing 10,000 units and in packages of one syringe containing 20,000 units. Cutter Laboratory, Berkeley, Calif. (Jour. A. M. A. Dec. 4, 1926, p. 1917.)

Typhoid Prophylactic (New and Non-official Remedies, 1926, p. 359).—This typhoid vaccine is also marketed in packages of one syringe and in a 20 c.c. bottle. Cutter Laboratory, Berkeley, Calif.

Scarlet Fever Streptococcus Antitoxin Concentrated Globulin-P. D. & Co. (New and Non-official Remedies, 1926, p. 332).—The product is now prepared by the method of Drs. Dick. This product is also marketed in single 1 c.c. vial packages (for the diagnostic blanching test). Parke, Davis & Company, Detroit, Mich. (Jour. A. M. A. Dec. 11, 1926, p. 1999.)

Homocamfin — Cyclosal. 3-methyl-5-isopropyl-Δ2-cyclohexanone dissolved in an aqueous solution of sodium salicylate. Methylisopropylcyclohexanone, the potent constituent of homocamfin, is claimed to have an action similar to camphor, but to surpass it in intensity and rapidity of action on the heart and respiration. It acts almost instantly when given intravenously, hence caution must be used when it is administered in this way. Homocamfin is used as a stimulant in cardiac failure, surgical shock, narcotic poisoning and respiratory failure. The product is marketed in Ampules Homocamfin 10 per cent (for intramuscular use) and Ampules Homocamfin 1 per cent (for intravenous use). Winthrop Chemical Company, Inc., New York.

Tutocain.—Butamin. p-amino-benzoyldimenthylaminomethyl-butanol hydrochloride. Tutocain is a local anesthetic employed chiefly for surface anesthesia and by subcutaneous injection. In experiments made for the Council, Tutocain in 3 per cent solution is about four times as toxic as procaine hydrochloride by rapid intravenous injection into the cat and a fatality has been reported following the injection of 8 c.c. of a 2 per cent solution into the urethra. On the other hand, experiments and clinical trials have been reported in support of the claim that Tutocain is relatively safe for use in surface anesthesia and by hypodermic injection. Tutocain is marketed as: Tablets Tutocain No. 1 (with Epinephin) containing 0.03 Gm.; Tablets Tutocain No. 2 (with Epinephrin) containing 0.03 Gm.; Tablets Tutocain No. 3 containing 0.03 Gm.; Tablets Tutocain No. 4 (with Epinephrin) containing 0.05 Gm.; Tablets Tutocain No. 5, containing 0.1 Gm. Winthrop Chemical Company, Inc., New York. (Jour. A. M. A. Dec. 18, 1926, p. 2093.)

Diphtheria Toxin-Antitoxin Mixture 0.1 L^1.—Each c.c. of the Diphtheria Toxin-Antitoxin Mixture (New and Non-official Remedies, 1926, p. 333) represents 0.1L^1 dose of diphtheria toxin neutralized with the required amount of antitoxin. The product is marketed in packages of three 1 c.c. vials for one immunization; in packages of thirty 1 c.c. vials for ten immunizations; in packages of one vial containing 50 c.c. Cutter Laboratory, Berkeley, Calif.

Pirquet Test.—Tuberculin-Koch (New and Non-official Remedies, 1926, p. 344) marketed in packages of three capillary tubes. Eli Lilly & Company, Indianapolis.

Tuberculin Ointment for the Moro Percutaneous Test.—Tuberculin-Koch (New and Non-official Remedies, 1926, p. 344) marketed in the form of an ointment in tubes containing 2 Gm.

Old Tuberculin, Human Strain, Concentrated.—Tuberculin-Koch (New and Non-official Remedies, 1926, p. 344) marketed in 1 c.c. vials. Eli Lilly & Company, Indianapolis.

Tuberculin, T. R. Concentrated, Human Strain.—New Tuberculin T. R. (New and Non-official Remedies, 1926, p. 347) marketed in 1 c.c. vial packages. Eli Lilly & Company, Indianapolis.

Tuberculin, B. E. Concentrated, Human Strain.—New Tuberculin B. E. (New and Non-official Remedies, 1926, p. 347) marketed in 1 c.c. vials. Eli Lilly & Company, Indianapolis.

MINNESOTA MEDICINE

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Vol. X FEBRUARY, 1927 No. 2

EDITORIAL

Trachoma or Not Trachoma

The importance of correctness in diagnosis is well illustrated by the recent unfortunate situation at Devils Lake, North Dakota. The story, the final chapter of which may not yet have been enacted, cannot be related here and we hope we may be excused for any inaccuracies which may appear in our version of the situation, but it happened something like this:

Towards the end of last year some school children in Devils Lake, which is not so far from the Ft. Totten Indian Reservation, were found to be suffering from some conjunctival affection. A special physician in the government Indian service was called upon by the local authorities to render assistance in examining the school children of the town. As a result several scores of the children were found to be suffering from an affection of the conjunctiva which was diagnosed trachoma. The children were sent home from school with cards so stating and the parents were advised to have their children operated upon. As a result a considerable number were so operated upon, many (perhaps most) by the trachoma expert.

Not content with the diagnosis made by the authorities some of the local physicians raised a question of the possibility of an error in diagnosis. As a result several children said to be suffering from trachoma were taken elsewhere for medical opinion. Some, at least, of these consultants found no evidence of past or present trachoma and considered the condition to be simple lymphoid hyperplasia or folliculosis.

It is well known that the diagnosis of early trachoma is often most difficult. Many general practitioners find no difficulty in recognizing a long standing case. While the onset may be most acute it often is most insidious, although it is questionable whether the onset is ever so gradual in a child as not to attract attention. The nearby prevalence of trachoma on the Indian reservation doubtless had much to do in starting what became a panic. Several children were excluded from school and the following day developed measles.

Nor is this recent episode alone in the annals of medical history in this country. Similar scares have occurred in New York state, the middle south, and in South Carolina. In the last mentioned state in 1920 some representatives of the United States Public Health Service threw the entire state into a panic and it was a matter of several months before the opinion of the local ophthalmologists as to the non-existence of trachoma was accepted.

Perhaps the best lesson to be learned from such an incident is the importance of procuring the best possible consultation when a contagious disease of such grave importance is suspected. Health authorities have a serious responsibility towards a locality and in an effort to play safe doubtless tend to make a graver interpretation of symptoms than is oftentimes warranted.

The Cleveland Meeting of American College of Physicians

"I belong to ten national societies, besides all our local society groups"—thus wrote a busy confrere within the week, when questioned about the prospects of his attendance at the clinical session of the American College of Physicians, Cleveland, Ohio, February 21-25.

This answer is a fair and reasonable one, yet it has in it a note of needless despair. We might ask our leading retailers how often they send representatives to the great centers and their markets. We may as well come to understand that the practice of medicine cannot safely revolutionize every ten years unless the men who try to keep in their respective communities are willing to attend the great meetings that bring to them and their hospital staffs the current knowledge and opinions which tend to keep our profession vitalized and dynamic. It is not enough that we should have this vital stimulus, but we must be kept safely in line with reasonable, sane practices and beliefs. Reading alone of the splendidly available literature is not enough—we must see and hear the men who teach; we must gain balance and perspective where the written word alone may falsely proportion.

The Cleveland session is to be the eleventh annual meeting, intended primarily for internists and the associated specialties of neurology, pediatrics, roentgenology, pathology, dermatology and psychiatry.

The standards set for membership are high, and many men of distinction in the profession are presently in its membership. Dr. Alfred Stengel, of Philadelphia, heads the organization this year, and with Dr. John Phillips, of Cleveland, is arranging a splendid program—bringing together some of the keenest medical minds in the United States and Canada. Following more recent traditions in medical gatherings, there will be clinics and demonstrations from the various hospitals and laboratories of the Western Reserve University for the morning; the afternoons will be devoted to formal papers and lectures; the evenings will be fully occupied with formal addresses by distinguished guests (American and foreign), and by the president or other representatives of the College.

An invitation has been extended by the College to all qualified physicians and laboratory workers to attend the Cleveland clinical session. This invitation should be accepted by all who may possibly be able to attend.

E. L. T.

Vicious Journalism

A number of years back in a weak moment of interest or was it curiosity, we subscribed (we blush now to admit it) to a magazine known as Physical Culture. A book, the name of which has long been forgotten, was gratuitously included in the subscription and was promptly burned in the furnace. How such a book or for that matter most of the Macfadden publications are allowed in Uncle Sam's mail we do not understand.

Recently a tantalizing (?) subscription offer to the same magazine with another volume thrown in was received with reprints of portions of articles which appeared in a recent number of this same magazine. It seems that B. Macfadden's name should be added to the list of famous syphilographers. He has found a cure, he admits it, which is simple and lies within the human body itself. "Salvarsan and six-o-six," (the new authority apparently does not know the names are synonymous) and mercury and the iodides are useless in the treatment of this disease, and his treatment will cure every case. It does seem remarkable that it remained for a journalist, and a busy one at that judging from the variety of publications he sponsors, to make this startling discovery and to disprove the long list of scientists who devoted their energies to the study of this disease. A reading of the confessions of one Harry A. Mitchell in this same magazine number would doubtless convince the most skeptical, especially as an M.D.'s affidavit as to the presence and cure of the disease is affixed. We are constrained to wonder why B. Macfadden himself didn't make the certification.

If we had not been convinced that B. Macfadden wanted our subscription rather than to enlighten us as he professed we might have learned too, what a throttling organization the A.M.A. really is and how it is forcing allopathy on the citizens of our country. Is it possible that B. Macfadden himself wants to join this A.M.A.?

We believe in the value of physical culture and the care of the human body. But a journal of Physical Culture which proposes a propaganda which will encourage sufferers from syphilis to

neglect treating this scourge in time to avoid the ultimate possible sequelæ of paresis, tabes and aneurysm we heartily condemn. This editor Macfadden evidently believes in the value of publicity, publicity at any cost no matter what contradictory or false statements he makes to get talked about. The harm an individual of this type can do is inestimable. The presumption of his attempt to enlighten members of the medical profession by such false statements becomes an affront.

State Dues

If the rate at which the local secretaries are collecting State dues and turning them over to the State Secretary is an indication of the willingness of the local societies and their members to coöperate with the State Association in putting over the program outlined, it looks as though it would be a success.

To date we have a membership of 1,714 with six societies still out. This is very far in advance of the membership in March, last year. One of the larger societies has secured payment of dues from every member in the district who was a member last year and has not since removed. Aside from this the society has seven new members.

Are you one of the 10 per cent still out in the Societies which have reported?

OBITUARY

Dr. William R. Murray

William R. Murray was born at Marquette, Michigan, April 6, 1869, and died at the Abbott Hospital, Minneapolis, after an illness of eighteen days' duration on December 27, 1926, at the age of fifty-seven.

He received his Doctor of Philosophy degree at the University of Michigan in 1892 and graduated from the Rush Medical College in 1897. His internship was served in the Illinois Eye, Ear, Nose and Throat Infirmary, and he did postgraduate work at Philadelphia in 1899 and in Vienna and London in 1909 and 1914. He practised in Milwaukee for a year after completing his internship.

Dr. Murray came to Minneapolis in 1902, where he began the practice of the specialty of Eye, Ear, Nose and Throat, and became a member of the faculty of the University of Minnesota Medical College. He was associated with the late Dr. Frank Todd for several years in the early part of his career, and in 1921 became a member of the Nicollet Clinic, of which he was medical director at the time of his death.

His connection with the Medical School lasted from 1903 until his death. He was Chief of the Department of Ophthalmology, Otolaryngology and Rhinology, a position which he had held since 1918.

In 1906 he married Elizabeth Eaton of New York, who, with their three children, Gordon, Julian and Mary, survives him.

Dr. Murray was a member of the American Academy of Ophthalmology and Laryngology, of the American College of Surgeons and the American Medical Association. He was at one time president of the Minnesota Academy of Ophthalmology and at another time vice chairman and secretary of the section of his specialty of the American Medical Association. He was a member of the hospital staff of the University and Abbott Hospitals.

He was a member of St. Mark's Episcopal Church, of the Minikahda Club and of the Minneapolis Club, and was a Thirty-Second Degree Mason.

William R. Murray was a man of reserve and of dignity. He was honored and respected by his associates, and those who were privileged to know him well recognized in him a character of rare kindliness and generosity. In his quiet, unassuming way, he did more for the progress of medical education and for the fostering of medical ideals in his community than any one can ever know. All the honors and all the responsibilities which came to him in the course of his industrious career were proof of his real worth, for no one was ever more modest and less self-seeking than he.

The tragic circumstances of his illness and death, following the infection received in the care of a patient, has cast a cloud over our association. The life of this earnest, gentle, gifted man can truly be epitomized in the words, "He died to save another."

The following memorial has been adopted by the Faculty of the Medical School of the University of Minnesota:

MEMORIAL TO

WILLIAM ROBBINS MURRAY, Ph.B., M.D., F.A.C.S.
Professor and Chief of the Department of Ophthalmology and Oto-Laryngology.
Born April 6, 1869—Died December 27, 1926.

There are few friends so genuine, so constant, so simply friends, there are few men in medicine so faithfully, so modestly, so uniformly efficient, there are few teachers so direct, so staid, so sound, as was William Robbins Murray, whose death his friends, his colleagues and his students mourn today.

He was one of those rare

"Souls, without reproach or blot,
Who do His will and know it not,"

and one of those rare associates whom one loves and respects unconsciously, almost as a matter of course, and without sensing either the necessity or the propriety of telling him so; and he was one who loved folks in his quiet unemotional way because they *were*

his fellows and because he never wanted to be at odds with anyone. He was a gentleman in the original meaning of the old term; he was gentle alike in breeding, in manner, and in heart,—and yet he was a man among men.

His work was well done. He died an untimely death in the doing of his duty, without thought of lurking danger to himself, devoted solely, as he always was, to the competent service he could render to the sick.

"To the beauty he has wrought, to the truth that he has taught, to the comfort he has been, to the dream the poets tell," to the land where human love and memory alone can follow him, we must let him go.

It only remains to us to offer to those who loved him most and best, the assurance that we loved him too and that we share with them the sorrow that is most keenly theirs.

Dr. Daniel James Paradine

Dr. Daniel James Paradine of Duluth died at the age of 41 years, Monday, October 18, 1926, following a short illness. Dr. Paradine had undergone an operation and was believed to be improving when he suffered a relapse.

Daniel James Paradine was born at Camden, New Jersey, in 1885. He attended Bennett Medical College in Chicago, graduating in 1911. After serving as staff physician of the Chicago county hospital, Dr. Paradine took up his practice at Cloquet, Minnesota. He moved to Duluth in 1918 following the forest fires which destroyed Cloquet and had lived and practiced there since. He was a member of the house staff of St. Mary's hospital at Duluth and was also a member of his county and state medical associations.

Dr. Paradine is survived by his widow and one brother, John Paradine, Davenport, Iowa.

Dr. Gustavus Adolphus Newman

Dr. G. A. Newman died very suddenly at his home Wednesday evening, December 22, 1926, aged 64 years.

Gustavus Adolphus Newman was born at Brockton, Mass., August 29, 1862. He had lived in Minnesota since 1868. For the past sixteen years he served as physician at the Minnesota state prison.

Surviving are the widow, one daughter, Lolita, and a brother, E. T. Newman, at Goodhue, Minn.

The following appreciation written by a friend of Dr. Newman is taken from a local newspaper:

"In the passing of Dr. Newman, Stillwater has lost a notable character. A student of medicine under the great Dr. Osler, he brought to his calling a keen mind and sympathetic heart. The task of a prison physician is a difficult one. Without sympathy one grows harsh; without insight into character one is imposed on. Dr. Newman with rare ability and rare unselfishness ministered unto all sorts and conditions of men with a judgment that was rarely led astray. Men in the hospital learned to love him for his fidelity and genuine interest in them. I recall the expressions of gratitude of many during the epidemic of the influenza. They would wake at night to see the good doctor bending over them, anxious to relieve their suffering. He was to them no mere official but a true friend.

Intellectually Dr. Newman was of exceptianal gifts. He was a reader of the best books, being especially interested in archeology and history. He had a fine collection of Indian relics most of which he had found himself. Deeply interested in freemasonry, he had given the fraternity long and valued service. Above all he was a sincere and earnest Christian. His faith and trust were at the foundation of that strong and noble and unselfish character which his friends appreciated, but which is all too rare in this heedless, hurrying world. May the memory of his life help many of us to braver and better lives."—Francis L. Palmer.

Dr. Samuel D. Flagg

Dr. Samuel D. Flagg, one of St. Paul's last physicians of the old school, died Saturday, Dec. 25, 1926, at St. Joseph's hospital after a week's illness. He was 88 years old and the oldest practicing physician in St. Paul.

Although forced to retire five years ago because of failing eyesight, Dr. Flagg refused to abandon his offices in the Guardian Life building, where he appeared almost daily until he became ill.

A naval surgeon, serving with the Union forces throughout the Civil War, he resigned after the conflict and came to Minnesota to regain his shattered health. Physicians declared he would not live, but Dr. Flagg practiced medicine for more than half a century. He is believed to be the first physician who practiced in St. Paul.

He was the first doctor to bring a clinical thermometer to Minnesota and the first to perform a cataract operation in this state. He was prominently identified with the enlargement of St. Joseph's and St. Luke's hospitals and his early treatment of insanity cases, the first in Minnesota, was followed by the establishment of the state institution for the insane at St. Peter.

True to the old school of medicine, his practice was always of a general nature and through the age of horse and buggy his tall, thin figure became a familiar sight throughout the rapidly growing city. His practice was a high duty to him which he continued until the age of 83.

He was born at Buffalo, N. Y., August 7, 1838, and graduated from the Jefferson College of Medicine at Philadelphia in 1859. He enlisted in the Navy before the outbreak of the Civil War.

His civic activities came in connection with his work in aiding hospitals as a charter member of the Ramsey County Medical Association.

He also was a member of the Loyal Legion of Civil War Officers, the G. A. R. and the Paladin commandery, Knights Templar.

Dr. Thomas J. Maloney

Dr. Maloney was born in St. Paul, July 18, 1879. He died November 25, 1926. After attending the St. Paul public schools, he received the degree of M.D. from the University of Minnesota in 1901. He practiced medicine at Hunters Hot Springs, Montana, for about two years.

Having decided to specialize in diseases of the eye, ear, nose and throat, in 1910 he studied in Vienna and London for a year and a half and then in New York City for one year. Upon his return he practiced his specialty in St. Paul.

Dr. Maloney served sixteen months in the army during the World War and one year over seas. He served as regimental surgeon of the 206th Infantry, Minnesota National Guard from 1921 to 1925. In 1925 he was appointed State Surgeon of the Guard with rank of Lieutenant Colonel.

At the time of his death he was ranking surgeon of the National Guard, a member of the Ramsey County Medical Society, Minnesota State Medical Association, American Medical Association, The Minnesota and American Academies of Opthalmology and Otolaryngology and chief of the nose and throat department of St. John's Hospital. His fraternal organizations included the American Legion, Masons, and Junior Pioneers.

He originated the organization of the Northwestern Medical Officer's Association of the World War and was its first president.

In 1909 he married Martha L. Rich.

Dr. Maloney was beloved by all who knew him. He never failed to respond to calls for service to the medical profession, and what he did, he did well.

The medical profession of Minnesota has lost a faithful worker and those of us who knew him best, a loyal friend.

Dr. Rudolph Schiffmann

Dr. Rudolph J. Schiffmann, multi-millionaire manufacturer of proprietary medicines, resident of St. Paul for 35 years, died Dec. 23, 1926, at his home in Pasadena, Calif.

He was 82 years old. Mrs. Schiffman, two daughters and two sons, one of whom is Rudolph J. Schiffmann, Jr., survive him.

Born in 1844 in St. Louis, Mo., Dr. Schiffmann was educated in the public schools and Washington and St. Louis universities. After serving through the Civil War as assistant surgeon in the United States Army, he resigned his commission and moved to St. Paul.

Dr. Schiffmann retired from regular practice in 1879 and afterward devoted most of his time to civic projects. He was a member of the St. Paul park board for a number of ycars and served three terms in the city assembly from 1900 until he resigned in 1905 and moved to California.

Dr. William Harrison Daniels

Dr. William H. Daniels, prominent physician of Crookston, Minnesota, died at the Northern Pacific Hospital in Saint Paul October 14, 1926. Death was due to frontal brain tumor.

William Harrison Daniels was born in Williamsburg, Iowa, in 1887. He received his medical degree at the University of Louisville School of Medicine in 1910. Following a short period of practice in Hamilton, Iowa, Dr. Daniels moved to Crookston in 1915, where he continued in practice until two weeks before his death. Dr. Daniels served in the medical corps during the World War. He was a member of his local, state and national medical organizations and was prominent in civic and fraternal organizations in his own community.

Dr. Daniels is survived by his widow and a son, Harrison, his parents of Williamsburg, Iowa, two brothers and four sisters.

OF GENERAL INTEREST

Dr. W. F. Cantwell of International Falls was elected coroner of Koochiching County at the November election.

Dr. C. A. Smith of Faribault is now in the East, from where he will take a boat trip through the Panama canal to San Francisco.

Dr. Toshiyuki Matsuia, Traveling Fellow from the University of Mukden, Manchuria, China, is spending some time visiting the Mayo Clinic.

Dr. W. A. Meierding, formerly of Springfield, Minn., has associated himself with the Fritsche Clinic, New Ulm, Minn.

Dr. Carl Johnson, who has been connected with The Bratrud Clinic at Warren, recently resigned and has returned to his old home in St. Paul.

Dr. O. C. Strickler has retired from active practice because of ill health and with Mrs. Strickler is spending the winter months at Long Branch, California.

Dr. H. Winnett Orr, of Lincoln, Nebraska, gave the first annual Mayo Foundation lecture in orthopedic surgery in Rochester on January 25. His subject was "Osteomyelitis."

At the recent annual meeting of The Red River Valley Medical Society, Dr. G. A. Morley, Crookston, was elected president and Dr. M. O. Oppegaard was re-elected secretary.

Dr. Albert Fritsche was married to Miss Elsie Marti, both of New Ulm, Jan. 10, 1927. They will spend their honeymoon in Europe. The Doctor will take post-graduate work in Vienna.

Mrs. Jessie Rice Greene, wife of Dr. Charles Lyman Greene of St. Paul, died at her home, Monday, Dec. 27, 1926. The sympathy of the medical profession of Minnesota goes to Dr. Greene in his bereavement.

Dr. H. G. Reineke is superintendent of the Roentgenological department at the Cincinnati General Hospital. Dr. Reineke was formerly associated with his father, Dr. G. F. Reineke, at New Ulm, Minnesota.

Dr. G. C. Thomson, a Fellow in the Rockefeller Foundation who has been in The Mayo Foundation for six months, has gone to Johns Hopkins, where he will continue his fellowship in the Rockefeller Foundation.

Members of the Bratrud Clinic, Warren, Minnesota, have severed connection with The Warren City Hospital and recently opened a private hospital in rooms over The Warren National Bank and the Warren Post Office.

Dr. Daniel H. Bessesen of Minneapolis was the principal speaker at the annual meeting of the Sioux Falls District Medical Society held at Sioux Falls, S. D.,

Dec. 14, 1926. His subject was "Post-partum infection."

Appointment of Paul Fesler of Oklahoma City as the new director of the University hospital at the University of Minnesota has been approved by the board of regents. Mr. Fesler succeeds Dr. Louis E. Baldwin, who died last fall.

Dr. A. G. Wethall has returned from Vienna, where he visited the various clinics, and has resumed his practice with offices at 436 Syndicate Building, Minneapolis. Dr. Wethall's specialty is urology, cystoscopy and consultations.

Dr. George A. Geist will be chief of staff of Ancker hospital, Saint Paul, for the coming year. He was elected to that post at the annual meeting of the staff of the institution in January. Dr. E. V. Goltz was elected secretary.

The staff of the Union Hospital, New Ulm, Minn., has elected the following officers to serve for the ensuing year: President, Dr. Geo. B. Weiser; vice-president, Dr. T. F. Hammermeister; secretary, Dr. Geo. F. Reineke; treasurer, Dr. A. F. Kresske.

Dr. Arthur C. Strachauer has been appointed for a term of three years as head of the Department of Surgery at the University of Minnesota. Dr. Strachauer now will be in charge of both the department of surgery and the cancer institute at the university.

Dr. W. P. Larson, professor of bacteriology and immunology, University of Minnesota, addressed members of the Rice County Medical Society at their November meeting on the subject "The discovery and use of ricinolated scarlet fever immunizing antigen."

Dr. Louis Otto Kunkel, of the Boyce Thompson Institute for Plant Research, Yonkers, New York, gave the first Mayo Foundation lecture in a series on plant pathology and physiology in relation to man, in Rochester, January 14. His subject was "Filtrable viruses."

Dr. and Mrs. F. S. Warren and daughter, Miss Alice Warren, of Faribault, sailed December 14 from New York for a trip around the world. After a stop at Cuba, Panama and California they will sail westward to Hawaii and Japan and return to New York via the Red Sea and the Mediterranean.

A recent report made by a Red Wing physician gives the following statistics for that city regarding births during 1926:

Of the total 258 births 209 were born in hospitals; 254 were attended by physicians, 2 by midwives, and 2 were reported by the parents. In comparison, the statistics for 1908 show a total of 163 births, of which 12 were in hospitals, 61 were attended by physicians, and 102 by midwives.

Dr. George O. Welch, superintendent of the State Insane Hospital at Fergus Falls for 34 years, has resigned his position. Dr. Welch's successor is Dr. W. L. Patterson. The hospital at Fergus Falls is the largest in the state and Dr. Welch is said to be the oldest superintendent or head of any state institution.

The Executive Council of the Association of American Medical Colleges has ordered that the Medical Department of the Graduate School of the University of Minnesota (including The Mayo Foundation) be admitted to membership in the Association of American Medical Colleges, following a detailed inspection made recently by Dr. Fred G. Zapffe, Secretary of the Association.

Dr. Smiley Blanton, head of the Minneapolis Child Guidance Clinic for more than two years, will leave August 1, and in September will become the first professor of child study at Vassar College.

At Vassar, Dr. Blanton will be the first professor to occupy the Francis Skinner Edris chair, recently endowed to furthering study of children. Vassar has a nursery school and child guidance clinic, and the fall will inaugurate a new course including physical, mental and intellectual study. Dr. Blanton will have charge of the mental division of the course.

Abbott hospital in Minneapolis is to have a new $350,000 addition according to plans made known by the committee in charge in January. The new building will be from four to six stories high and will be erected on property adjoining the present hospital plant. It will be a structure 75 by 130 feet and L shaped. A service building 40 by 80 feet is also being planned.

In the addition there will be private rooms, double rooms, operating rooms and laboratories. Architecture will conform with the other buildings in the group. The service building will contain a laundry and the heating plant. When the expansion program is completed, Abbott hospital will have one of the most modern plants in the northwest.

Construction work on the new structures will begin late in the winter or early spring. They will be ready for occupancy late in the year.

Dr. Charles H. Mayo of Rochester was elected president of the Chicago and Northwestern Railway surgeons at the sixteenth annual conference held in Chicago in December. Other officers chosen are: First vice president, Dr. R. F. Campbell, Watertown, S. D.; second vice president, Dr. O. J. Fay, Des Moines, Iowa; member of executive committee, Dr. J. F. Smith, Wausau, Wisconsin; secretary-treasurer, Dr. C. W. Hopkins, Chicago.

A new addition to the Willmar Hospital at Willmar, Minnesota, was completed in January. The addition provides twenty-five more private rooms, giving the hospital a capacity of fifty beds. An elevator has been installed near the ambulance entrance. One half the rooms are furnished with private telephone service, and a "silent" call system has been provided for all the rooms. The Willmar Hospital is conducted by Dr. B. J. Branton and Dr. A. F. Branton.

Dr. H. B. Fralic has been appointed head of the United States Veterans' hospital at Fort Snelling. Dr. Fralic was surgeon in charge of the Aberdeen hospital, Saint Paul, for four years to February 1926, when he served in a similar capacity with a veterans' hospital at Lake City, Florida. Dr. Fralic assumed his new duties January 1, 1927. The new Fort Snelling hospital is to be composed of 22 buildings, will house 500 veterans and will be manned by a staff consisting of 500,

numbering doctors, nurses, attendants and office employes. It has been announced that the hospital will probably not be in complete operation before next summer.

Drs. H. M. Workman, A. D. Hoidale and Warner G. Workman, of Tracy, have recently moved from their former offices into a new $50,000 Masonic building, the doctors and the former Dental Clinic composed of Drs. James, Casselman and Haycock, having formed a Medical and Dental Clinic. The ground floor of the building was arranged according to plans formulated especially for the clinic, the medical men occupying a suite of ten rooms, not including the reception room and ladies' rest room, which latter are used in common with the dentists. The medical suite of rooms includes an *x*-ray room, chemical laboratory and library, and an *x*-ray and laboratory technician is employed.

SECRETARIES ARE TO BE GUESTS OF THE ASSOCIATION

The Council has authorized Dr. W. F. Braasch, president of the Minnesota State Medical Association, to call a Conference of Local Secretaries as guests of the State Association at the Saint Francis Hotel, Saint Paul, Tuesday, February 8, 1927. This Conference will start promptly at 9 o'clock, and is for the purpose of discussing problems of interest to the local secretaries as they pertain to the profession.

It is of the utmost importance that all the Secretaries be present at this Conference. If circumstances are such that it is impossible for the Secretary to be present, then the President of the Society should attend.

ANNUAL CERTIFICATE

Each member of the State Medical Association who has paid his dues, will receive within a short time a mailing tube.

This mailing tube will contain:

1. The Annual Certificate of Membership.
2. One card with a synopsis of the principles of the Minnesota State Medical Association, and
3. Ten paper copies of same.

(1).—The purpose of the certificate is that it be framed and placed in a prominent place in each member's office so that persons entering the office may know that he is a reputable member of the medical profession.

(2).—The card with the synopsis of the principles of the Minnesota State Medical Association should be hung near or on the frame containing the certificate of membership.

(3).—The other ten copies are to be distributed in any manner thought best.

The above is a partial answer by the officers of the Association to criticisms that the public do not know what the State Medical Association stands for; nor are the public able to determine who are members of the State Medical Association.

The certificate of membership should be framed and hung in a prominent place. The framing will cost about fifty cents; the frame should be made so that the next Annual Certificate can easily be inserted. This will let the public and individual patients know that the member owning the certificate is considered a reputable physician by the other members of his profession.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

STATE MEETING

The annual meeting of the Minnesota State Medical Association will be held at the new Hotel Duluth, Duluth, Minnesota, Thursday, Friday and Saturday, June 30, July 1 and 2.

The House of Delegates will meet Thursday morning, June 30, and the scientific sessions will begin Thursday at 2 P. M. and will continue until Saturday noon, July 2.

Thursday evening will be devoted to the usual Medical Economics meeting and the annual banquet will be held Friday evening, to be followed by a dance.

The program committee has arranged for a number of symposia on various subjects including Immunization and Acute Infectious Diseases, Pulmonary Tuberculosis, Gallbladder and Liver, the Gastro-Intestinal Tract, the Heart. Clinics on skin, neurological and hypertension patients as well as a demonstration of functional liver tests are also scheduled.

The Women's Auxiliary is preparing an attractive program. Miss B. C. Keller, lay educational director of the Illinois Association, will address the Medical Economics meeting and the Women's Auxiliary.

THE MINNEAPOLIS SURGICAL SOCIETY

The regular monthly meeting of the Minneapolis Surgical Society will be held at the University Hospital at 8:00 P. M. on Thursday Feb. 3. The meeting will consist of a presentation of cases from the University Hospital and Cancer Institute.

A fine program has been arranged by the Staff and all physicians are cordially invited.

HENNEPIN COUNTY MEDICAL SOCIETY

Officers and committees elected for 1927 at the annual meeting of the Hennepin County Medical Society held Jan. 3, 1927, are as follows:

President, Dr. Stanley R. Maxeiner; first vice president, Dr. A. E. Hedback; second vice president, Dr. C. O. Maland; secretary-treasurer, Dr. Erling Hansen; librarian, Dr. T. A. Peppard (re-elected); executive committee, for three years, Dr. Fred A. Erb, Dr. A. S. Hamilton; board of censors for three years, Dr. J. M. Hayes, Dr. Douglas Wood; board of trustees for three years, Dr. A. W. Abbott (re-elected), Dr. W. A. Jones (re-elected).

Delegates to State Convention, 1927, are: Dr. W. A. Fansler, Dr. E. K. Green, Dr. W. A. Jones, Dr. Ralph Knight, Dr. E. A. Loomis; with the following as alternates: Dr. Frank Hacking, Dr. J. P. Hiebert, Dr. C. C. Kennedy, Dr. H. M. Lee, Dr. J. A. Myers.

WASHINGTON COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Washington County Medical Society was held Tuesday evening, Jan. 11, 1927, at 6:30 P. M., with a dinner at the Grand Cafe in Stillwater. Dr. J. F. Savage of St. Paul was the principal speaker and his talk was followed by a general discussion.

SCOTT-CARVER COUNTY MEDICAL SOCIETY

The Scott-Carver County Medical Society held its regular meeting at Belle Plaine, Minn., Thursday, Dec. 2, 1926.

Following its business meeting Dr. M. Ghent of St. Paul gave an address on the subject, "Focal Infections in Relation to the Heart."

Dr. E. M. Hammes, St. Paul, gave an instructive discussion on the subject of the "Present Situation of Epidemic Encephalitis."

The Belle Plaine physicians entertained the society at a banquet following the scientific session.

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

The West Central Minnesota Medical Society held its annual meeting at Graceville, Dec. 11, 1926.

Dr. C. I. Oliver acted as host to the members of the society and their ladies at dinner.

Election of officers for the coming year resulted as follows: President, Dr. C. F. Ewing, Wheaton; vice president, Dr. Chas. Bolsta, Ortonville; secretary and treasurer, Dr. H. Linde, Cyrus; delegate, Dr. Chas. Bolsta, Ortonville; censors, Dr. E. A. Eberlin of Glenwood and Dr. H. J. Shelver of Ortonville.

After the business meeting Dr. J. M. Arnson of Graceville presented a very interesting clinical case to the society, and a general discussion followed.

The next meeting of the society will be held at Wheaton, Feb. 19, 1927.

RICE COUNTY MEDICAL SOCIETY

At the annual meeting of the Rice County Medical Society held at Faribault in December the following officers were elected for the coming year: President, Dr. C. A. Traeger, Faribault; first vice president, Dr. F. R. Huxley, Faribault; second vice president, Dr. F. J. Lexa, Lonsdale; secretary-treasurer, Dr. C. J. Plonske, Faribault; censor for three years, Dr. Joseph Moses, Northfield; delegate to state meeting, Dr. F. S. Warren, Faribault; alternate, Dr. D. E. McBroom, Faribault.

The proposed Basic Medical Practice Act was discussed by Dr. F. J. Savage, Dr. J. T. Christison and Dr. E. A. Meyerding, all of St. Paul, with members of the Society.

JOB FOR A GOOD SAMARITAN

A live-wire salesman rushed up to the home of a doctor in a small village about 3 a. m. and asked him to come at once to a distant town.

The doctor cranked his flivver and they drove furiously to their destination.

Upon their arrival the salesman asked, "How much is your fee, doctor?"

"Three dollars," said the physician, in surprise.

"Here you are," said the salesman, handing over the money, "the blamed garage keeper wanted $15 to drive me over when I missed my train."—Keystone Motorist.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of November 10, 1926.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 10, 1926, at 8 P. M. Dinner was served at 7 P. M. The meeting was called to order by the President, Dr. F. E. Burch. There were twenty-eight members and three visitors present.

The minutes of the October meeting were read and approved.

A motion was carried that the President appoint a Committee to draw up resolutions on the death of Dr. L. B. Baldwin, an Honorary Member of the Academy.

Dr. Arnold Schwyzer (St. Paul) reported two cases as follows:

1. The first case I wish to report is of a man seventy-two years old, who was brought to me by his doctor, who had operated on him eight weeks before. At that time a severe intestinal obstruction had existed, and a median laparotomy over the lower aspect of the abdomen was made. The obstruction was found to be due to a large mass at the junction of the sigmoid with the rectum. The bowels being enormously distended, it was wisely decided not to do more than a colostomy. Since the relief of the obstruction, the patient improved considerably and the doctor wanted me to see if an extirpation could and should be done. Accordingly the abdomen was reopened on May 3, 1926. The mass was found to be bulky and reached from the middle of the left linea innominata to the promontory and from this level downward into the pelvis. Boggy irregularities like packages of large lymph nodes outlined the mass toward the promontory and the whole was fixed to the pelvic wall. It looked as though we were going to get into collision with the left common iliac vessels and the ureter, and we decided that the man was better off with his colostomy and an attempt to hold the growth in check by radium. The abdomen was closed. In case the mass should be inflammatory it was best to leave the old man alone for the present, and after a prolonged rest things would become more favorable for operation on account of the colostomy. If the mass was malignant, the case was inoperable; and we inclined toward this diagnosis.

On September 20th, after my return from the summer vacation, the patient was re-examined. We were struck by the splendid appearance of the man, who was however quite unhappy with his colon fistula, and wanted it closed if there was a possible chance. We tried to tell him that hundreds of people were living quite comfortably with a colostomy, and that just then we had heard from one of our patients that she was feeling fine and happy with her colostomy seven years after the operation (excision of the rectum for carcinoma). Of no avail; he wanted to take the chances of resection and closure of the anus preter naturam. With his seventy-two years he declared he was not old enough to stay at home; he wanted to meet his friends

socially and to feel clean. Here was a reason for re-operating, though we should have preferred to wait longer. It was by now more probable that we had to deal with an inflammatory condition, *i.e.,* a diverticulitis.

An *x*-ray examination showed a complete obstruction and, indeed, not even a drop of water came from the colostomy opening when an enema under three feet of pressure was given per anum. The finger, inserted through the colostomy, and palpation of the abdomen made us feel that the tumor mass was considerably smaller, and perhaps operable.

Specimen, Case 1 (Dr. Schwyzer).

On September 22nd, the mass was excised. The thickening reached so close to the colostomy that a reliable and clean suture seemed impossible. The stump from the colostomy down to the upper line of resection was not longer than about two and a half inches and was, of course, fixed far over to the left. This made it insufficiently accessible from our right rectus incision. A Murphy button here rendered good service. The larger half was introduced into the lower opening, which seemed however barely large enough for the button.

Though the post-operative course was perfectly smooth for the first two weeks, on the 15th post-operative day (October 7th) the patient had some pain in the pubic area and fever of 100 degrees was recorded. We became anxious to get that Murphy button, which on account of a lack of a *vis a tergo* might stay there indefinitely and might cause an ulceration in this firm tissue of reduced vitality and elasticity, because considerable quantities of radium had been administered. On October 9th the colostomy was widened by incision and the finger could reach the button. A strabismus hook could be introduced into the lumen of the button and, with a good amount of patience, taking care not to cause pain, the button was delivered through the colostomy opening. A colostomy closure was made, but had to be undone the next day as flatus went into the subcutaneous tissue and caused an emphysema of scrotum and penis which persisted for over a week. The patient left for his home on October 24th. (Note: We saw him again on November 18th, when the colostomy opening was practically closed.)

The specimen, as you see here, is about 4 inches long. There exists no ulceration of the mucosa anywhere, though water would not even now go through it. A longitudinal section struck three diverticula imbedded in bulky, infiltrated and hard fatty masses. Two of the diverticula containcd hardened fecal matter, hard enough to be called stones. When the photograph was made one of these stones had been lost.

2. The second case is one of hydrops of the renal pelvis showing no communication with the kidney; therefore not hydronephrosis, but hydropyelon, a congenital anomaly. This will be reported later after further study.

Dr. C. Eugene Riggs (St. Paul) read a paper entitled "Notes on Epidemic Encephalitis." (See page 100.)

Dr. R. E. Farr (Minneapolis) read a paper entitled "Shortcomings in Cleft Lip and Palate Surgery and Suggestions for Meeting Them." (See page 70.)

The meeting adjourned.

Carl B. Drake, M.D.,
Secretary.

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of December 2, 1926.

The regular meeting of the Minneapolis Surgical Society was held on Dec. 2, 1926, at the library of the Hennepin County Medical Society. Meeting was called to order by the President, Dr. E. C. Robitshck.

Dr. C. M. Roan of Minneapolis presented the following case, which was felt to be of interest in connection with the topic of the evening.

The patient is a farmer, aged 54, who presented himself for examination on December 18, 1925. His family history is negative in every respect. His only complaint at the time was that of an uncontrollable itch and a deep jaundice. In July and August, 1925, he had suffered what he termed "weak spells." Had seen his family physician and had been sent back to work, as much as he was able to. Had experienced no nausea, no distress after meals but an uncontrollable diarrhea. Appetite always good. Had not been aware of a swelling in the epigastrium. When he came for

examination he was in a very poor condition. He had a deep copper colored hue with eyes as deeply jaundiced as the skin of an Indian. Lost weight from one hundred forty-five pounds to one hundred nineteen.

Blood Pressure: 92/64. *Coagulation time:* 9 minutes, 20 seconds. *Wassermann:* negative. I cystoscoped him to rule out right kidney and fluoroscoped him to rule out the stomach. Patient was advised to go home as other physicians had told him. He presented himself again two weeks later, December 30, 1925, when his condition was found even more aggravated. At that time the liver was very much enlarged and engorged but I could make out what I believed to be the gallbladder. Patient extremely emaciated and jaundiced. Patient was told that if he cared to risk it, I would tap the gallbladder under local anesthesia. This was done on the following day, December 31, 1925. Engorgement of the liver subsided and he felt better. Drained freely until February. My intention was to give him whatever relief surgical procedure could afford him. Diagnosis: 50 per cent malignancy although any primary lesion could not be found, 25 per cent cyst in liver, 25 per cent chronic pancreatitis. When he had gained sufficient strength I recommended an exploratory operation under gas and ether, which he underwent. I promptly closed him, as the pancreas had the feeling of a frozen fish. Could trace it from head to tail. On March 15, 1926, he consented to further surgical measures, at which time I did a cholecystduodenostomy by the suture method. Patient was discharged from hospital April 14, 1926. Traveling home by auto he developed an orchitis. I felt that this was a possible indication that the pancreatic enlargement was inflammatory rather than malignant. His present condition is good. Weight today one hundred thirty-eight pounds. Appetite good. Has an uncontrollable desire for tobacco. Post operative hernia at present time only handicap. Doctor James Johnson saw him prior to the last operation and can verify, if desired, my synopsis of the case.

The address of the evening was delivered by Dr. John B. Deaver of Philadelphia on the subject "Chronic Pancreatitis" (illustrated by lantern slides). His paper is printed on page 65 of this issue.

THEODORE H. SWEETSER, M.D.,
Secretary.

ENTEROCAP ORALSULIN

This is advertised by the Lafayette Pharmacal Company as "a product of the Pancreas of young food animals that is designed for use as an adjunctive treatment of Diabetes Mellitus." From this and other statements it appears that it is claimed to be a preparation containing insulin put up in enteric coated capsules for oral administration. Even if one could be sure that the insulin said to be present would arrive in the intestine unharmed, the weight of evidence is against its probable effectiveness. There is no convincing evidence to show that any preparation taken by mouth is an effective means of producing the characteristic action of insulin. (Jour. A. M. A., Dec. 4, 1926, p. 1935.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

SARCOMA OF THE PROSTATE: REPORT OF A CASE WITH A DIGEST OF THE LITERATURE: Richard R. Smith, M.D., F.A.C.S., and William R. Torgerson, M.D., Grand Rapids, Mich. (Surg. Gynec. and Obst., 1925, XLIII, No. 3, 328). In a review of the literature the authors found 83 cases of sarcoma of the prostate had been reported and to this number they added their own case.

The case reported in this article was a married man 31 years of age. He reported for examination two weeks after the onset of first symptom, which was a sudden retention of urine; he continued also to have a great deal of difficulty in urinating. On rectal examination, he was found to have a large, smooth mass in the prostatic region, and on cystoscopic examination, equal bulging was seen at the base of the bladder. The tumor was removed through the perineum and the pathologist reported sarcoma. Deep x-ray therapy was given without success. Death occurred about four months after symptoms began. At autopsy, recurrence was found which projected from perineal wound and almost filled the pelvis, invading bladder, urethra and rectum. Metastases found in lymph glands, fourth lumbar vertebræ, tenth rib, pleuræ and both lungs.

The authors find that the statistics from the literature vary from the teachings of the text-books in regard to the age at which sarcoma of the prostate is found, the relative malignancy of the various types, and the location of metastases. In the cases reported 30.5 per cent occurred during the first decade and 60 per cent during adult life, which disproves the idea that it is always a condition found in infancy and childhood.

Clinical picture was found to vary little whether it occurred in child or adult. Usually the first symptoms were difficulty or complete retention of urine or partial obstruction of bowel and later pain in pelvis and limbs, hematuria occasionally and sometimes tumor

would fill the whole pelvis. Histologically many types have been described; but the round cell is the most frequent, constituting 36 per cent, and next in frequency is the spindle cell, 20.4 per cent. Metastases found most frequent as local extensiton, but were found in nearly every organ of the body.

Duration of life after first symptoms were noted varied from eleven days to twenty-four months. Palliative treatment was thought to be the best treatment at the present time.

M. P. Omohundro, M.D.

EXTERNAL FECAL FISTULÆ IN ACUTE APPENDICITIS: Ralph Colp (Ann. Surg. 1926, 84, 837-840). During the past decade 36 per cent of the cases of acute appendicitis admitted to the surgical wards of the Mount Sinai Hospital have been complicated by abscess formation or general peritonitis. This is a serious indictment of the laity in general and the profession at large. It means that drastic purgatives are still administered promiscuously for abdominal pain and that the ice-bag and watchful waiting take their ultimate toll in death. Willis has recently called attention to the fact that appendicitis is responsible for a large proportion of surgical deaths and that the mortality has increased within the past number of years. Unpleasant complications also are not rare.

In 2,841 consecutive cases of acute appendicitis seen at the Mount Sinai hospital 33, or 1.1 per cent, developed fecal fistula. It is usually incident to vascular thrombosis or inflammation of some part of the terminal ileum or cecum, resulting in the sloughing of the intestinal wall. While it is most frequently seen in cases of acute gangrenous appendicitis with perforation and abscess it may be due to poor surgical procedures.

Rough manipulation through a small, inadequate incision may be a factor, as well as improper or poorly placed drainage producing pressure necrosis of an inflamed bowel wall. Unprotected gauze and hard, unyielding rubber or glass tubing are much inferior in this respect to soft pure gum tubing. Inversion of the appendiceal stump may lead to the formation of fistulæ by strangulating the blood supply, by pressure necrosis or by the formation of a hematoma or abscess. The simple "drop method" of caring for the stump, which is almost routinely employed at the Mount Sinai hospital, is simple and carries with it a low incidence of fecal fistulæ.

When a fistula occurs drainage tubes should be shortened or removed as soon as possible, or softer and smaller tubes substituted and the surrounding skin protected by suitable dressings. The diet should be constipating. The majority of fistulæ occur within the first two weeks after operation. They will usually heal spontaneously, only 12 per cent, or 4 cases in the series of 33, requiring operative interference.

Harold E. Simon, M.D.

PEDIATRICS

SUPERVISORS:
CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

HEMATOLOGICAL STUDIES OF PREMATURE BABIES DURING INFANCY WITH PARTICULAR REFERENCE TO ANEMIC CONDITIONS: A. Lichtenstein, M.D. Abstracted by Bernard S. Denzer, M.D. (Archives of Pediatrics, November, 1916). Hemoglobin and red blood cell values in the majority of new-born prematures agree with those in full-term infants. Fetal characteristics are present to a higher degree in the smears of new-born prematures than in those of new-born full-term infants.

Uniformly during the first two months of life, prematures develop an anemia which warrants the term, hypoplastic anemia.

The low red blood cell count found during the first few months improves spontaneously during the second quarter of the first year. On the other hand, during the same period low hemoglobin values remain unchanged, probably on account of the lack of material for hemoglobin formation, in other words, a too small congenital iron storehouse.

Alimentary anemia is developed by a one-sided milk diet, probably on account of lack of iron in the food and depletion of the congenital iron depot. Because of the congenitally small iron storehouse, prematures are particularly predisposed to alimentary anemia.

The condition has been called "chlorosis," and has a good reaction to iron therapy. Czerny did not find the chlorotic type of blood picture to be constant and iron therapy was of no value. Cure can be accomplished by the reduction of milk and the substitution of a mixed diet; this therapy may require months to be effective. Prolonged nutritional disturbance should not be excluded as a possible contributing factor in the production of alimentary anemia.

In conclusion, Lichtenstein states that upper respiratory, as well other infections, tend to produce or enhance an anemia, and that this effect varies, depending on the constitution of the child and the virulence and duration of the infection.

If one recalls that iron is stored in the infant during the latter part of pregnancy, it becomes easy to think of prematurity as a cause of alimentary anemia. When the congenital iron supply is low, an alimentary anemia will occur early. When the supply is normal, as in full term infants, anemia will occur if the iron-poor milk diet is continued after the usual period of lactation. In this way one may explain the early oligochromemia of prematures and the later anemia of full term infants.

Alimentary anemia appears in forms varying from a chlorotic-like blood picture to that of so-called pseudoleukemic anemia. The latter type of anemia (pseudoleukemic) is considered to be a severe stage of in-

fantile anemia. Prematurity is often an important pathogenic factor in its development.

Medicamental iron therapy in large doses has a curative effect on the anemias of premature infants. Iron is well tolerated. Medicamental iron therapy has a good effect in alimentary anemia even without reduction in the amount of milk in the diet.

In cases classed as pseudoleukemic anemia, iron also shows good results.

R. N. Andrews, M.D.

NARCOLEPSY—A SYMPTOM COMPLEX: A. A. Weech, M.D. (Amer. Jour. of Diseases of Children, November, 1926). There are two symptoms which characterize narcolepsy: (1) The patient has a tendency to go to sleep at frequent intervals through the day, (2) the patient may find that any emotion causes a feeling of generalized weakness, so that his knees may give way under him and allow him to fall.

Typical narcolepsy runs a chronic course. In some of the cases, however, improvement has been noted under different forms of therapy, but unfortunately most of them have been observed for short periods only and the ultimate outcome is not on record. It is interesting that most of the reported cases refer to males of adult age.

Soporific drugs, given to deepen the sleep at night, have had no effect in relieving the patient by day. Up to the present time there is no accurate knowledge concerning the etiology of this affection.

It is likely that narcolepsy does not represent a disease sui generis, but is rather a syndrome or symptom complex depending on injury of a definite area in the brain.

R. N. Andrews, M.D.

ROENTGENOLOGY

SUPERVISORS:
LEO G. RIGLER,
MPLS. GEN'L HOSPITAL, MINNEAPOLIS
A. U. DESJARDINS,
MAYO CLINIC, ROCHESTER

OSTEOPETROSIS: Karshner (Am. Jour. Roent. November, 1926). A new name is advanced for this condition previously known most commonly as "marble bones." The disease is defined and its history is briefly given. The author has carefully studied the literature, and finds only 18 authentic cases on record. The essential features of each case are briefly reviewed and 4 additional cases are reported.

The causative factor is heredity, and this is assumed to be a primary mesenchymal dyscrasia leading to abnormal and excessive bone-building. The pathology is a diffuse malformation of bone and cartilage manifesting itself as a disturbance of ossification. Grossly there is the increase of hard, cortical bone to more than twice the normal thickness, with condensation and broadening of the bone trabeculæ, obliteration of the spongiosa by the encroaching compacta, and crowding of the marrow elements, often with replacement by fibrous tissue.

The roentgen findings are unique, with involvement of the entire osseous system. The term "marble bone" is fairly descriptive. There is obliteration of the medullary cavities, solid dense bone in place of the pneumatic structures of the skull, and various other bone deformities and abnormalities, comparable with the pathology. The bone itself is very brittle and spontaneous fractures are common.

Walter H. Ude, M.D.

IRRADIATION OF DISEASED TONSILS: J. Coleman Scal (Med. J. & Rec., 124:873, Dec. 1, 1926). This article describes a new method of treating tonsillar hypertrophies by means of removable platinum radon seeds, giving detailed reports of a series of cases where tonsillectomy was for different reasons contraindicated, and illustrating the application of the technic to varying pathological conditions.

To carry out the application of the seeds, a new implanter is used which is illustrated and described in the article.

As the pain of implantation and removal is practically *nil,* at no time is any anesthetic required, there is no need of hospitalization, nor disability of any kind. The total absence of shock is a great advantage in inoperable cases.

By means of the implanter the operator is able to place one removable radon seed in the center of a tonsil so that radiation is distributed equally throughout. The radon seed used is filtered by 0.3 mm. of platinum. This filtration cuts off the caustic Beta rays, thus doing away with all possibility of burning with consequent necrosis and sloughing.

When the instrument is withdrawn after implantation the seed is left imbedded in the tonsil with a 2 cm. length of thread protruding from the portal of entry. This short thread does not in any way inconvenience the patient, nor cause the slightest interference with function. At the end of four days the seeds are easily removed by grasping the thread with forceps.

The point of the trocar is so fine and the seed so small that very little trauma is done to the tonsil.

The amount of radiation can be measured with accuracy and the applicators located with such exactness as to insure equal and complete distribution throughout the tissues. Only one treatment is necessary, a fact much appreciated by the patient. Systemic reactions of any kind never occur. The attached thread, making the seed easily removable when its period of service is over, does away with an objectionable foreign body being left in the tissues—a drawback to the bare tube method. The author concludes that in the implantation of removable platinum radon seeds we have at present an adequate substitute for tonsillectomy in those cases where surgery is, for any reason, contraindicated.

The technic and method described in the article have been developed by Dr. Joseph Muir of New York.

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

SUGGESTIONS ON THERAPY OF THE POST-ENCEPHALITIC PARKINSON SYNDROME

REPORT OF TWO CASES

C. Eugene Riggs, M.D.
Saint Paul

The Parkinson syndrome occurs in 25 per cent of the cases of epidemic encephalitis (Hall). The expressionless face, the staring look, the monotonous voice, the stiff, shuffling gait, the short steps, the arms held motionless by the side and the distinctive position of the hands, the peculiar posture of the body, the sialorrhea and the increased pulse rate present a characteristic picture never to be forgotten. This syndrome may develop during the acute illness or months or years (as long as five years) after its occurrence. There may be no recognizable initial illness, as the two cases which form the basis of this report demonstrate. The syndrome may be incomplete, namely, limited to the face, an arm or a leg or hemiplegic in type. The partial cases are more hopeful than when the musculature of the entire body is affected. The failure in muscular power is markedly less than in ordinary paralysis agitans. The syndrome usually becomes stationary and the patient a permanent invalid. Improvement may occur spontaneously, only to be followed by a great increase in the rigidity, or complete recovery may take place.

Treatment is purely empirical and thus far has proved most disappointing. The therapeutic agents most promising are nicotine and the atropine group. Moll has used nicotine in thirteen cases of post-encephalitic Parkinsonianism. Nine showed improvement; four were not benefited. The former stated that "their joints felt looser and that their limbs were freer." The initial injection was 1/30th grain given three times a day. This is continued for a few days if the pulse shows no appreciable change; the dose is then increased gradually until a tenth or a fifth of a grain is reached. This dosage may be maintained for several weeks unless intolerance becomes apparent. Nicotine does not influence the tremor or the sialorrhea. Six months after its discontinuance, all of Moll's nine patients had relapsed into their previous condition. While immediate lessening of the hypertonia was noticed, no worth-while benefit was observed.

The improvement to be obtained by the use of the atropine group, as advised by Hohman and Hall in the encephalitic Parkinson syndrome, is in the experimental stage; its possibilities and permanency are yet to be determined. In eighteen cases, in which hyoscine hydrobromide was used by Hohman, there was slight improvement in six; a definite improvement in five, while in seven it was marked. Some of the patients were able "to attend to personal wants after being bed-ridden and helpless." The disappointment of some of us with hyoscine has probably been due to our reluctance to prescribe so potent a drug when the patient was not under our immediate observation. In half of the cases in which scopolamin was used by Kennedy, Davis and Hyslop, they observed there was a lessening of the rigidity, a restoration of the facial mobility and that the patients were generally more comfortable. Gelsemium, they found, had an effect similar to that of scopolamin and in the same proportion of cases. The former, they believe, is to be preferred over the latter because "it can be used for an indefinite time and has none of the dangerous concomitant effects of the latter."

Hall used belladonna in nineteen cases. Six derived no benefit; three showed no objective evidence of improvement, although the patients reported themselves as feeling better; as to the benefit in ten there was no doubt. In some cases the improvement was astonishing, amelioration being noticed a few days after treatment began. Foster Kennedy reports a striking therapeutic result in a middle-aged Parkinsonian who could neither articulate, chew nor move her arms or legs voluntarily, yet after the use of a suppository of belladonna of "tolerance dosage," she could talk fluently, move quickly and gracefully and express her emotions in a normal manner. While the respite was but temporary, yet the same response was invariably obtained.

Case 1.—Miss H., aged 20, three years ago experienced a dull pain in the right arm. This lasted a week; then lethargy occurred which persisted three months. There was blurring of vision but no diplopia and no fever. There was, however, a distressing sialorrhea. Two years later the Parkinson syndrome appeared. In February 1926, tremor appeared in both arms, more marked in the right than the left, so severe as to make eating difficult. Her face was expressionless, eyes staring, mouth open, gait, attitude and carriage characteristically Parkinsonian. Her body was bent over as in extreme age. She was unable to chew her food. She lived on liquids; when she attempted to masticate, the lower jaw would drop and she was unable to control its movements. Shortly after the administration of belladonna a noticeable lessening in the hypertonia was apparent. The sialorrhea is no longer annoying; she walks erectly, shoulders drooping if tired; the mouth is usually closed; tremor markedly less; facial expression almost normal; she goes and comes from the toilet unaided. There has been a great change for the better in her ability to masticate. She can now chew her food for a few moments; after a brief rest she is able to resume eating. The muscular tone as shown by the capacity of the limbs when brought by passive movements into a new position was noted to observe whether they would so remain after release. The "shortening and lengthening" which was present when first examined has completely disappeared. She is taking thirty drops three times a day without any symptoms of intolerance manifesting themselves.

Case 2.—Mr. L., aged 25, a patient of Dr. Hengstler's. There was no history of an initial illness. The first symptom was a failure of speech; he could not talk above a whisper. Associated with this was difficulty in deglutition and an inability to masticate his food. After chewing for a few minutes the lower jaw would drop. The face was expressionless and the hypertonia of the muscles was confined to the right side—a hemi-parkinsonian syndrome. Added to this is a paresis of the right arm and leg. His gait was staggering and when walking he dragged his right foot. From the beginning of his illness he has complained of feeling weak and exhausted. The significant feature of his illness is the personality change. This has been characterized by irritablity, fickleness and his inability to appreciate properly domestic and social amenities. The surprising thing is that this behavioristic change did not suggest the true nature of his illness. Under belladonna therapy the most remarkable improvement has taken place in this patient. He is taking thirty drops of the tincture three times a day. His facial expression is practically normal; speech has greatly improved. The hemi-parkinson syndrome has disappeared. He walks much better and no longer drags his right foot. He eats without difficulty and the sialorrhea has ceased.

Hall believes that belladonna, by its influence on some part of the neuromuscular area, relieves the hypertonia and, as it were, knocks off the Parkinsonian shackles from the muscles; the higher nervous centers, being thus unfettered, will do the rest. There can be no question as to the therapeutic importance of the atropine group—belladonna and hyoscine. The former, Hall regards as the more efficient. The value of nicotine is highly problematical. There is in the Parkinsonian a marked psychic factor which is influenced to a greater or lesser degree by the various forms of therapeutic approach. The atropine group would appear to offer the greatest relaxation of the hypertonia, relieving the "tied by the muscles feeling" which paralyzes all initiative and spontaneity of action—most distastrous psychically to the patient—and creating thereby a feeling of hopefulness most helpful and beneficent.

"He who begins in certainties," says Bacon, "will end in doubt, and he who begins in doubt will end in certainties." Our belladonna therapy in the encephalitic Parkinson syndrome began in doubt and we are far from ending in certainty, yet the improvement in these two patients has been surprising, rapid and remarkable. If such a notable amelioration can be obtained in a certain percentage of Parkinsonians, although its use be necessary intermittently or continuously, belladonna is a drug of priceless value to this class of hitherto handicapped, helpless and bedridden cases. While belladonna probably has no curative influence on the pathological state underlying the Parkinson syndrome, it does favorably modify its reactions on the nervous mechanism. As to the character, extent or ultimate benefit arising from this modification, we are absolutely ignorant. This therapeutic adventure, judging from the literature and our limited experience, is well worth trial.

MYOSITIS OSSIFICANS

CASE REPORT

Hugh T. Jones, M.D.
Rochester, Minnesota

This case is presented because of the relatively rare incidence of myositis ossificans and because of the confusion that exists in differentiating it from sarcoma.

The patient, a young woman aged nineteen, came to the Mayo Clinic February 1, 1926, because of a swelling of the anterior part of the right thigh. One month previously she had noticed "cramps" in the right thigh when her knees were drawn up at night. There was no history of trauma. Three weeks before examination the patient felt something pressing on the muscle of the thigh and she believed there was something between the muscle and the bone. About three days later she began to have trouble walking downstairs and limped when she tried to run. There was no pain but motion of the leg was impeded. She had not lost weight or strength. A physician was consulted who thought that there might be a collection of fluid in the thigh. Aspiration was attempted but was not successful.

Physical examination revealed a firm, sensitive, poorly defined mass in the anterior part of the left thigh. The muscles seemed to move over this. The roentgenogram (Fig. 1) disclosed an area of increased density in the muscles anterior to the femur, suggestive of ossification or calcification.

In order to establish a diagnosis an exploratory operation was performed and a mass measuring 4 by 3 by 3 cm. was removed from the rectus femoris. On gross section it was seen that laminæ of bone were arranged in plaques running longitudinally between zones of muscle tissue. Microscopic examination of a section of the decalcified specimen revealed these strata of spongy bone interspersed between, or else replacing, the disintegrating fibrotic striated muscle. The spicules of bone were lined by a definite row of osteoblasts (Fig. 2).

DISCUSSION

Noble recognized three main types of myositis ossificans: (1) myositis ossificans progressiva, occurring mostly in young persons, invading first one muscle and then another; (2) myositis ossificans conscripta, of which the "rider's bone" is an example, illustrating the formation of bone in a muscle which is subjected to long-continued and often-repeated injury or irritation, and (3) a localized form of myositis ossificans; in this type are included the cases of myositis ossificans traumatica.

The case under consideration is of the third type, localized myositis ossificans. It resembles closely the cases of myositis ossificans traumatica reported by Coley, Jones, Finney, Kidner, and others, but it differs from the usual cases reported in that a history of trauma is lacking, whereas trauma is usually prominent

*From the Division of Surgery, Mayo Clinic, Rochester, Minn. Submitted for publication December 2, 1926.

in the history, and the patient was a female, whereas males are usually affected.

The condition is probably the result of an injury to the periosteum and muscle with associated hemorrhage. The injury to the periosteum and bone liberates osteoblasts which find their way into the muscle through the extravasated blood. The osteoblasts evidently develop bone within the muscle. A history of trauma was lacking in this case, but there was most likely a slight injury that the patient did not notice.

The differential diagnosis is important because of the danger of confusing the condition with sarcoma. In the first few weeks the processes cannot be distinguished except by biopsy; it was the questionable diagnosis which prompted exploration in this case. Coley distinguishes the two conditions essentially as follows:

Myositis ossificans after its initial growth tends to regress, whereas progression is evident in sarcoma in time. On palpation the tumor of myositis ossificans is uniformly hard, whereas the tumor produced by sarcoma is not so uniform in its resistance to pressure. Early pain is characteristic of the benign lesion while it is rare in the malignant process; nearby joints are disabled early in myositis ossificans but only late in sarcoma, and if the disease has progressed so that definite changes may be seen roentgenographically the shadow cast by the former is more regular in outline than that of the latter.

Conservative treatment, I believe, is indicated if the diagnosis is reasonably certain. Rest in the stage of progression, then local heat, massage, and active motion to aid regression should be carried out. Surgery should be reserved for cases in which there is a residual disturbance of joint function. Early exploration in this case was mainly for the purpose of establishing a diagnosis.

Fig. 1. Region of increased density in the muscles anterior to the femur.

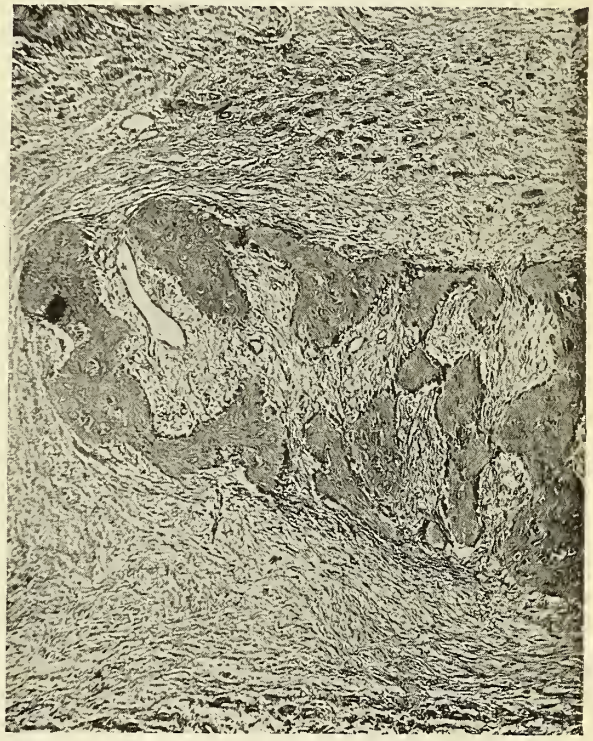

Fig. 2. Section of tissue removed at operation (x60), stratum of spongy bone, osteoblasts lining spicule of bone, and zone of disintegrating striated muscle with fibrosis.

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BOOK REVIEWS

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Report of the Department of Health of the City of Chicago for the Years 1923, 1924 and 1925. Herman N. Bundesen, M.D., Commissioner of Health, Chicago. 842 pages. Illus. Chicago: Igoe Press, 1926.

Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1926. 330 pages. Illus. Washington: Government Printing Office, 1926.

International Clinics. Vol. IV. 36th Series. Henry W. Cattell, M.D., Editor. 308 pages. Illus. Philadelphia and London: J. B. Lippincott Co., 1926.

Transfusion of Blood. Henry M. Feinblatte, M.D., Assistant Professor of Medicine, Long Island Medical College, Brooklyn, N. Y.; author of "Clinical Laboratory Medicine." 137 pages. Illus. New York: The MacMillan Company, 1926.

THE DOCTOR LOOKS AT LOVE AND LIFE.

Joseph Collins, M.D. 279 pages. New York: George H. Doran Company, 1926. Price $3.00.

This book will be of unusual interest to the physician because it is written by one of his own profession, a man who has practiced medicine for a third of a century, first as a general practitioner and later as a world renowned neurologist who at the same time had the ability and inclination to become a well known author with several non-medical books to his credit. The first half of the work, indicated in the title as "The Doctor Looks at Love," is a sane, frank, interesting discussion of the old but ever fascinating subject of sex, given in the clear, simple language of a man who is a logical thinker and who has the ability to express himself easily and clearly. As remedies for many of the evils of the day, he advocates earlier marriages and education of children upon the subject of sex. His general attitude toward the whole subject is well expressed when he says, "That the joys of the world are circumscribed by sexuality is an exaggeration and a falsehood. Sexuality sweetens life but it is not what makes life worth living."

The second half of the book, indicated as "The Doctor Looks at Life," consists of five separate essays on different subjects, bearing no connection to each other. The first is entitled "Adult-Infantilism" and is discussed in three aspects: in a nation, the U. S. A.; in the individual, with William Jennings Bryan as an example; and in literature. He indicates adult-infantilism not as a failure of the individual to grow and develop mentally but instead to carry over into adult life, to meet the problems of living, only childish mental traits and reactions.

The second essay, "Voices Crying in the Wilderness," is a treatise upon the intolerance existing in our country today, in which he says, "We have American tradition and American ideals upon our lips but graved upon our hearts is prejudice, intolerance and bigotry."

The third essay, "Do Characters in Fiction Behave Like Human Beings?" is a discussion of well known characters of fiction and he concludes that, as a general rule, authors give us real and human characters.

The fourth, "The Fundamentalists and Modernists of Psychology," is devoted to Freud and his doctrine. The author's disagreement with the well known psychologist becomes very apparent when he says, "One of the reasons why it has had such popularity and general interest in this country is because it allows sexually repressed individuals and puritanism-steeped people to talk frankly of things which would otherwise be considered shocking. It makes a science of obscenity. He tempers his criticism, to a certain extent, however, when he says, "Though we cannot accept the Freudian psychology neither can we reject it en masse. We are in the position of the man who needs a suit of clothes and has found one. He cannot wear it without looking ludicrous and contemptible. But he can have it made over, in fact he can make it over himself."

The fifth and last is devoted to "Adult Education and Libraries." and holds the most of academic interest in the group. The author says, "There is more universal education and less culture in the United States than in any enlightened country in the world" also "If anything, save love, can make us see our neighbor's eye without a beam, it is knowledge obtained through education. Most people do not want to think; they find it disagreeable and exhausting. They want to do things which will prevent them from thinking." He then says, "Anyone may acquire education if he makes proper use of his leisure time" and everyone should do this because "Education develops a sort of vitality by making life interesting and worth-while, it has another function: to develop sympathy and open-mindedness." He then discusses libraries and says, "Libraries, like hospitals, are made by their staffs, not by their buildings, their books or their beds."

This book, written by a clear thinking physician, with literary ability added to the keen insight and broad sympathy developed by years of practice in his chosen profession, should have a place, not on the physician's library shelves, but on his desk, where it may be frequently referred to and slowly read with deep thought and meditation. It will contribute to his general education and breadth of vision, not by teaching him something really new but by crystallizing half formed thoughts and stimulating clear thinking concerning the fundamentals of life. Not many of us have the time to become educated along non-medical lines but we may all make a start in the right direction by reading "A Doctor Looks at Love and Life" and making it a part of our mental equipment as well as of our libraries.

Margaret Warwick, M.D.

COLLECTED PAPERS OF THE MAYO CLINIC AND MAYO FOUNDATION, Rochester, Minnesota. Octavo of 1078 pages, 252 illustrations. Cloth, $13.00 net. Philadelphia and London: W. B. Saunders Company, 1926.

The contents of the volume this year seems to show gain the interesting and enormous amount of work hich is being done at the Mayo Clinic. The compilers ave, as usual, divided the volume into various depart-ients, as follows:

1. ALIMENTARY TRACT.

Here are included many papers taking in order the arious diseases of the alimentary tract. Two papers pen the section, *i.e.,* Pharango-esophageal Diverticula nd Epigastric Pain as a symptom of esophageal ob-truction. The stomach is discussed, particularly ulcer, oth from the medical and surgical standpoint. One ery interesting paper is on Primary Carcinoma of the)uodenum.

Papers on gallbladder include many studies on the unctional tests of the liver, the physiology of the liver nd cholecystography besides the medical and surgical spects of cholecystic disease.

The colon is considered as to amebiasis, colitis and arcinoma, and the section closes with a technical paper n the removal of hemorrhoids.

2. UROGENITAL ORGANS.

This division includes papers on the kidney, as to -ray findings, transplantation, diuretics and tumor ormation.

The prostatic studies include benign hypertrophy, car-inoma and treatment for same. Treatment of car-inoma of the uterus is also concident.

3. DUCTLESS GLANDS.

Here thyroid disease is discussed most fully from ll aspects. Four other papers, one on tetany and one n diabetes, are also included in the section.

4. BLOOD AND CIRCULATORY ORGANS.

Heart disease is discussed, *per se,* also its relation to ther diseases. Ramisection and ganglionectomy are ully discussed. Hypertension, polycythemia vera and uerpera are other papers included here.

5. SKIN AND SYPHILIS.

The treatment of various skin diseases is consid-red, together with studies on syphilis, malaria treat-nent and spinal fluid findings.

6. HEAD, TRUNK AND EXTREMITIES.

This section is devoted to various methods of treat-nent of the different diseases of the head and neck, inuses, ear and nose. Tumors of the head and neck re considered. There are also interesting papers on lislocation of the shoulder (bilateral), ununited frac-ures and bone tumors.

7. CHEST.

There are four papers here considering the diagnosis nd study of certain types of chest disease.

8. BRAIN, SPINAL CORD AND NERVES.

Epidemic hiccup is ably discussed in this section. Other papers include ketogenic diet in epilepsy, surgical reatment of facial paralysis and tumors of the spinal ord.

A short section on "Technic" gives certain interesting papers on types of anesthesia; one on insulin and, the last, The Pilcher Bag as a means of securing hemostasis in suprapubic prostatectomy.

The last section is composed of a group of miscellaneous papers which were given throughout the year on various aspects of medicine. Some of the papers are more or less general in nature while others hold to a specific question. The whole volume is a beautiful and worthy contribution to medical science and is highly recommended.

A. E. CARDLE, M.D.

DISEASES OF THE BRONCHI, LUNG AND PLEURA. Frederick T. Lord, M.D. 2nd edition revised and enlarged. 776 pages. Illus. Cloth, $8.00. Philadelphia: Lea & Febiger, 1925.

This textbook is divided into three parts treating with Diseases of the Bronchi, Lung and Pleura, respectively. The author discusses quite completely the various types of Bronchostenosis from the standpoints of etiology, diagnosis and treatment. The chapter dealing with Pulmonary Tuberculosis is extensive and instructive, being replete with up to date information concerning diagnosis and management.

Lobar Pneumonia is given a good deal of space with a full discussion of the various situations which arise in the management of the disease.

Rare types of parasitic lung affections are described in sufficient detail.

Part III deals with Pleuritis and its various manifestations including a thorough discussion of Purulent Pleuritis.

The book as a whole embodies concise and logical consideration of these three important subjects. Its style and arrangement are so agreeable that one reads with pleasure and at the same time feels that he is obtaining valuable help from the author.

L. R. CRITCHFIELD, M.D.

YOUNG'S PRACTICE OF UROLOGY. Based on a study of 12,500 cases. Hugh H. Young, M.D., and David M. Davis, M.D., Johns Hopkins University, with the collaboration of Franklin P. Johnson. Two volumes, 1,484 pages, 1,003 illustrations. Cloth $25.00 net per set. Philadelphia: W. B. Saunders Co., 1926.

This well written, extensive, and beautifully published work on urology has a number of unusual characteristics to favor it. Although all subjects are adequately represented and the literature well covered, still the greatest space is devoted (1) to the clinical experiences with 12,500 cases treated by the authors and at the Brady Urological Institute; and (2) to the various procedures, mechanical devices, and original researches which have had their inception with the authors. To quote from the preface: "We perhaps should apologize for having devoted so much space to this personal work, but, as mentioned before, our interpretation of the reason for the lasting value of many old medical books, that are still full of interest after a lapse of many years, is their individual character and their detailed description of personal experiences and inventions. 'By their fruits ye shall know them.'"

The arrangement of the subject matter, almost entirely on the basis of pathology and etiology, is particularly interesting to the reviewer, reminding him strongly of the arrangement of subjects in McCallum's "Textbook of Pathology." This plan of arrangement is a peculiarly happy one. For instance, all lesions produced by obstruction of the urinary tract are considered together. It is also noted that, to avoid repetitions, all operations on the urogenital tract are described in one section of the book.

There are more than 1,000 fine illustrations,—colored plates, photomicrographs, roentgenograms, and drawings by William P. Didusch.

We feel that "Young's Practice of Urology" will live for many years as one of the great works in its field.

THEODORE H. SWEETSER, M.D.

THE DUODENAL TUBE AND ITS POSSIBILITIES. Max Einhorn, M.D., Professor of Medicine at the New York Postgraduate Medical School; Visiting Physician to the Lenox Hill Hospital, New York. Second Edition, Revised and Enlarged. Illustrated. Philadelphia: F. A. Davis Company, 1926.

A very interesting treatise of 200 pages, giving the development of the duodenal and stomach tubes, with all the later developments of the intestinal tubes, pyloric dilators, delineators and other instruments for gastro-intestinal study. This book is profusely illustrated with diagrams, *x*-ray plates and numerous case reports, which make it easier for the physician to determine the indications for the various instrumentations.

The book is easily read, and for the progressive physician opens up an interesting field which is of benefit, diagnostically, and therapeutically.

A. N. BESSESEN, JR., M.D.

WANTED—Position as physiotherapist in a Minnesota hospital. Have had experience at the Battle Creek Sanitarium and in the Vancouver General Hospital. Part time with one or more hospitals agreeable. M.D. Address C-111, care MINNESOTA MEDICINE.

WANTED—Salaried appointments for Class A physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

WANTED—Physician to share nicely furnished offices in Lowry Building. $30.00 per month, including gas, electricity and telephone. Address C-110, care MINNESOTA MEDICINE.

LOCUM TENENS wanted for March. Two or three weeks. University of Minnesota graduate, finished internship. Address C-108, care MINNESOTA MEDICINE.

LOCUM TENENS WANTED from March 15 to July 1. Graduate of Minnesota, class of March, 1927. Address C-109, care MINNESOTA MEDICINE.

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WANTED—Eye, ear, nose and throat man and internist to become associated with a group of physicians. New clinical building. X-ray and clinical laboratories fully equipped. Will give free office expense until established. Address C-107, care MINNESOTA MEDICINE.

WANTED—Physician and Surgeon as partner in good paying practice. Complete equipment including X-ray. Excellent territory. Prefer a man about thirty years of age. For details write to L. M. Davies, 2103 Harriet Ave., Apt. 103, Minneapolis, Minn.

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DIFFICULTY OF ADJUSTMENT DURING THE ADOLESCENT PERIOD*

George Donohoe, M.D.
Superintendent of the State Hospital
Cherokee, Iowa

According to the last available Federal Census of the Insane, there were, in 1922, 258,421 patients on the books of the state hospitals for the insane in the United States, 73,000 of these being first admissions and 160,000 re-admissions. There was an average increase of 9,000 per year since the census ten years earlier. Of this vast army 23 per cent had been discharged as *recovered.* Of the remaining, 46 per cent had been discharged as improved, while the remainder were left in the hospitals as custodial charges of the public until death solved the problem.

This group of mental troubles requires more beds than all other groups of diseases. If all the defectives, delinquents, dependents and criminals were added together their combined total would not equal the number of insane under treatment.

To bring the problem of caring for and eliminating the causes of insanity directly to the people (those who pay the enormous bill) I am going to depart from a strictly medical paper and, if possible, give one that can be readily understood by those who have not studied medicine.

Therefore, I am going to state briefly that all mental diseases can first be divided into two great classes—Organic Insanities and Functional Insanities. The organic insanities are those in which there is an injury to the brain or the spinal nerve centers, and, since nervous tissue does not replace itself, no cure can be effected. The process of repair necessitates scar tissue, which interferes with the normal function. The only thing that can be done with organic insanity is at best to sometimes stop the progress of the disease and to keep the patient comfortable until death. On the other hand, theoretically speaking, all functional insanities should be curable, provided we know enough to determine the cause and to remove it. It is needless to point out that the 23 per cent recovered and the 46 per cent improved are in this functional group.

One of the most startling facts to the layman is the absolute certainty that about 60 per cent of all functional insanities are preventable:

1. There are 5 per cent of insanities due to alcohol. Judicious use of good spirits would entirely remove this disease.

2. One per cent of insanities is due to drug addictions—morphine, cocaine, etc. Non-use of these drugs as a stimulant would abolish nearly 3,000 cases a year.

3. Fifteen per cent of all cases are syphilitic insanities, and, while there are some cases of syphilis innocently acquired, we all know that the great source of this trouble is promiscuous sexual relations. A better standard of morals would eliminate this disease.

4. Of the functional cases the two large groups are the manic and the precox—the first being about 15 per cent and the latter 25 per cent of all admissions. These two groups are those that make up the bulk of our population, and while at present the manic group is quite hopeful from the standpoint of recovery the precox group is very stubborn to treatment and so far is considered quite hopeless—for the greater percentage of them remain in the hospitals until death.

When you look into the causes of insanities of the functional type you find many and various causes given. Two of the most prominent are hereditary and environmental influences; in plain words, traits that we are born with, and the influence of our surroundings and training, especially during our early years.

Everyone's present position in life is due to his adjustment to his surroundings or environment. The whole life of an individual can be summed up into three fundamental actions of his

*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, Oct. 18, 1926.

central nervous system. No matter how high or how low a position in life any individual person occupies, three things are essential: (1) a knowledge of his environment must be gained; (2) this knowledge must be brought into relation with previous experiences; and (3) the knowledge gained and associated must be transferred into appropriate actions.

Let us for a moment consider the infant just born—thrown into the world without its consent by the strongest urge planted in man by God Almighty. The infant is here because God ordained that we should reproduce our kind. Within a few short years this gift of heaven, helpless, innocent, pure as a flower, can be developed into an individual destined to be of great benefit to society, or on the other hand to be a source of sorrow and a spreader of corruption to all with whom he comes in contact. Aside from accidents, his destiny will be decided by his adjustments to his surroundings, his interpretations of the stimuli received during all of his life, but most especially during the formative years up to and including his adolescence.

Just for a moment let us see how all of us arrived at our present place in society. Each of us started as an infant, and our position is due to our adjustment to our environment, plus certain inherited qualities and absence of accidents. The senses give us our knowledge of our environment. The intellect associates and compares impressions with previous knowledge. Volition or will carries out the judgment of the intellect in conduct. Immediately after birth the senses register knowledge of the new world to the infant. Sensations of light, heat, cold, pleasure and pain are poured in on the young brain, which is like a blotting paper, ready to absorb everything.

Perhaps you might think the first period of absorption of stimuli might continue some considerable time before the second step, association, and the third, action, based upon the first two steps, would occur. The truth is, very few sensations are registered before they are associated with those just previously received and in almost no time volitional acts are performed by the infant upon his very limited previous experiences. As an illustration perhaps the first volitional act of a child is to cry. Every mother can tell you how quickly the baby learns to associate attention and care with the act of crying. In a month a baby can be a tyrant in a home. He soon learns whether his father will be his slave, walking the floor at night for his amusement, or whether the father will pay no attention to him. The infant can just as readily be taught that crying will not bring coddling, provided the baby had the good sense to pick parents of sound judgment, and there are not grandmothers too near at hand.

Good or bad habit associations can be formed very early in life and the earlier and more constantly correct associations are registered, the less difficulty there will be in shaping a child's adolescence. The years preceding puberty are the great formative period of our lives. Everyone knows the truth of the saying of Pope: "Just as the twig is bent the tree's inclined." Yet, many of us are negligent of our children during the years spent in grade schools and shift to school teachers, Y. M. C. A., Boy Scouts and other organizations the responsibilities which should be borne by ourselves. All of these agencies work diligently for the betterment of children and accomplish much good, but they only have the child during a few hours and unfortunately social habits of the parents leave little time for home life. We all know that the family is the only stable unit of society and in the home should be taught honesty, morality and discipline. There is no need to point out to you that you cannot teach honesty in a home by maxims and lectures delivered to children who see dishonest acts committed by parents or hear sharp practices discussed wherein one relates how he overreached another in business by cunning scheming. The child sees directly and he thinks straight and he learns hypocrisy, and his immature mind believes that not to be caught is the main thing to guard against. So it is with morality; maybe the boy or girl, instead of being in company with parents, spends leisure time with vicious associates. Many reports of juvenile offenders show that boys and girls from ten to twelve years of age have been guilty of immoral practices taught them by older school children. A boy or girl of 10 or 12 knows enough to realize that he is doing wrong but not enough to understand what the consequences of such actions may be. Let no mother be led astray by false modesty and not tell her young daughter the mysteries of child-bearing. If she has not mentioned it to her daughter of 10 years or so

she may be astounded to learn what vicious knowledge the daughter has picked up. If the mother has the child's confidence this can always be corrected before permanent harm is done. It is sometimes too late to talk of these things in adolescence when the urge of reproduction is surging through the veins. These desires and feelings are normal and are not to be repressed but curbed and directed by religious training. The boy, too, has his temptations and how many fathers realize the stuff their sons' wide-open ears hear from the hired men about the place? If you do not know what he will hear spend an hour or two among the weak, shiftless, unsuccessful men in a strange town. Maybe your position in your own town prevents your hearing much, but go into a community where you are not known and you will hear there what your boy hears when he hangs around the depot. In the boy's mind are many questions which he is diffident about asking his father. The father should broach such subjects to his son and not let him go into high school or even away to college without knowing what dangers immoral acts incur.

A word or two about discipline. No character can be built without discipline. No one can be successful in life until he has learned that there are certain rules and regulations of society which must be observed. The home has a similar relation to the child that society at large has to the adult. Definite duties and responsibilities should be laid down by the parents so that the child may learn before he goes out in the world that obedience to law and order will bring reward and peace of mind. The parent should, I believe, punish infractions of discipline involving lying, stealing and insubordination. The punishment may be ether corporal or deprivation of privileges, depending upon the personality of the child. Speaking generally, there is too little punishment in the homes today and such punishment oftentimes is given out of pique. A mother not infrequently punishes a daughter for breaking a dish, a father chastises his son because he has to replace a window pane broken by a wild pitch. Such punishment is not fair and does great harm. In those situations where a stranger can do more with a child than the parents you will often find a history of such punishments.

It is true that corporal punishment does not always produce good results, and best results are obtained only up to the age of 6 or 7 years. After that such punishment should always be avoided because the child knows that the parent is taking advantage of his ability and position as parent and he resents the dominating influence over his advancing growth of individuality and independence.

The reason that punishment must be different for different children is owing to the fact that roughly all of us may be divided, according to our personality, into two distinct classes of individuals. We are all extroverts or introverts. The extroverts find their thrill in life outside of self. They are the sociable personalities without traces of shyness, self-consciousness or awkwardness. They express their emotions freely and are responsive to the emotional feelings of others. They have the gift of charm. The introvert on the other hand gets his real thrill in himself before it is accepted or rejected. He is shy, silent, introspective. He frequently occupies himself with: What shall I do? What shall I accomplish? What of my future life after death? His emotions are reserved and it is difficult for him to express himself appropriately to the emotions of others. One can readily see that corporal punishment to introverts would be of great harm at any age, but especially in the formative years. A system of granting rewards or taking away privileges is the only reasonable method with such children.

To become successful citizens it is necessary that these two types of children build up character that will withstand the vicissitudes of life without becoming mentally deranged. Without a definite ideal or goal the extrovert will fall into the unreasonable conduct of the manic and the introvert develop into a shut-in precox. Perhaps their divergence from normal behavior may not be so extreme as to be a mental disease but only develop into a wastrel or wanton if of extrovert type, while the introvert becomes the moody, eccentric crank.

Adolescence as you know is that transitional period beginning with puberty and extending to maturity. It does not begin at an exact age in all individuals but generally from 12 to 13 years in girls and from 14 to 15 years in boys. It is the most precarious period in their lives. Upon the associations and the adjustments made in these years will depend the success or failure of their whole future. We all know how many youths of both sexes during these years are a

sore trial to their parents and their community and how many, in spite of all that is done for them, turn out badly. We hope and hope that after each failure another trial and a fresh start will eventually find them adhering to the proper path. The failures are usually those that were neglected or allowed to get into bad habits during the formative years. Let us not talk about the delinquent youth but let us spend a few moments considering what the boys or girls have to meet and adjust themselves to in their adolescent years.

First the girl: In every normal girl's heart there is an inborn love of the beautiful and a desire to make herself attractive, an instinct planted there by the Creator as an adjunct to stimulate mating and the bearing of offspring. Mothers should, by their counsel and example, direct this tendency and keep it within the realms of modesty and economy. Different times have different ideas and customs; just now it is quite difficult for a mother to insist upon modest attire for her daughter when her own person is arrayed as dangerously seductive as possible. The young girl has a desire for boy companions, a normal desire, and provided the association is supervised, most beneficial to both sexes. The parent must, however, exercise greater caution now than a few years ago. The automobile is now to be reckoned with. To be at home at 9 or 10 o'clock a few years ago meant but a short buggy ride. Now, home at 10 or 12 means that the girl may have been 100 miles away from home influences, at most questionable public dances, in strange towns where no fear of being recognized easily removes a certain restraint. Parents should always know where their daughters are and in whose company they are. At the Cherokee State Hospital the cars that are driven out of the grounds by the night watchman invariably bear the license number of foreign counties. As daughter grows older, and perhaps has to work, be particularly solicitous that her female friends are not such as will tell her of so-called easy ways to enable her to wear expensive clothes though on a modest salary. Try and show her that true happiness lies in personal worth and not in material welfare purchased at such a great price. Soon she will arrive at these conclusions anyway, and your counsel and example will guide her until such time arrives. Few of us realize how many girls go astray through ignorance. If she arrives at maturity without tarnish she will continue pure unless she deliberately and wilfully chooses to go to the bad, and such are very, very rare.

Now the boys: The boy during adolescence is a responsibility which oftentimes causes his parents grief and many gray hairs. His masculineness which begins to show itself dominates his actions and usually ruffles the temper of all who come in contact with him. The aggressiveness which will in later years, if properly trained, be turned into founding a home and protecting it is now manifested by turbulence and rebelliousness, and in order to attract the other sex he exhibits recklessness and braggadocio. While in this stage he is a hero worshipper although he carefully conceals it and would strenuously deny it if questioned. There is someone in the community or in the public print whom he secretly emulates and, so far as he can, imitates. Fortunate indeed for both parent and boy if this stage is passed under the guidance of some good manly football coach or physical director. He is now old enough to be told frankly by his father the dangers that lie in wait for him if he treads the Primrose Path. Illustrations may be found in almost any community of brilliant men who have been successful for a few years and then suddenly been cut down by paralysis or other obscure conditions, long before their time. He should know that these breakdowns may follow infections contracted years before by illicit sexual relations. Do not be afraid to be frank with him; he will eventually learn all of these things. He should be taught early so he can protect himself. During this stage the boy must be guided and mistakes condoned and corporal punishment discarded. Wise counsel, judicious praise and an establishment of companionship between father and son, even at the expense of club or lodge life, will do the most for the growing young man.

Both the boy and the girl should be encouraged to bring their friends to the home. This may cause some inconvenience but the parents should make this sacrifice so that they can supervise their companions and their pleasures without being too dictatorial. Every parent can readily discern whether someone brought to the home is undesirable and tactfully weed him out from the circle. It will take some effort to make the home the center of the amusements of the chil-

dren but you will be well repaid. Just now many children have all of their amusements and associations away from home and use home only as a place to eat and sleep.

In my talk I have been considering the average normal boy and girl. I have not touched upon the feebleminded and subnormal. Such are another problem and must be dealt with in a different manner. However, it is well to bring to your mind that there are in physicians' offices and dispensaries of general hospitals and wards of State Hospitals, almost countless men and women, who, starting as average normal boys and girls, have through faulty mental habits become a burden to themselves and to society. Thus it is with delinquents. We hear so much nowadays about delinquents, especially juvenile delinquents, being feebleminded. I do not believe this at all. Dr. William Healy, of Boston, psychiatrist to the juvenile court, states that 70 per cent of those coming before him for examination are normal.

Faulty mental habits contracted early in life have a tendency to bring on insanities in individuals who are of bad hereditary taint. Those that are not burdened by insanity and defectiveness in their ancestors may not become actually insane but the faulty habits cause them to be peculiar and they form many of the borderline cases. This is especially true in functional cases, those that are, generally speaking, incurable. Then, too, there is a large group of mental cases that our present knowledge will not let us say definitely whether they are organic or functional, but we know that they are very stubborn to treat and that the majority are incurable (certain types of dementia precox and paranoia). Very frequently in tracing the histories of individuals with these mental troubles it is found that when children they were morbidly shy, very seclusive, and did not want to mix with other children of their own age. Such children, if crossed or corrected, were very apt to fly into an uncontrollable irritability or would withdraw themselves into a moody silence lasting several days. Such behavior is not normal and should be corrected. Such children are apt to develop paranoid personalities, that is, to think that everyone is against them, and finally to progress into a true insanity. Children who do not take part in games with other children are very prone to fall into the habit of day-dreaming, which finally culminates in desires that can't be fulfilled in this world. They gradually build a phantasy world of their own and soon have to go to a mental hospital. These peculiar traits in children should be noted by parents and teachers and efforts made to correct them early before permanent damage is done. Oftentimes parents don't notice them or if they do they think possibly the children are delicate and humor them in their eccentricities. Such a course is very bad for the child. There will come a time when the parents and family can't put up with the ever increasing whims and fancies or possibly the parents die and the young man or the young woman finds the world will not give them the undue consideration they have enjoyed. A conflict with society occurs and the patient goes to a mental hospital. Many adults take refuge in insanity to escape an existence for which they know themselves unfitted. No one would think that an untrained person should be put in a responsible position without previous training, yet this is what the parent has unconsciously done. If parents would stop and think they would know that the busy world will not take the time and trouble to humor anyone as they have their children. To be a successful citizen a certain coöperation is necessary; if it is denied by the individual, society will place these individuals in hospitals or reformatories where society will be least disturbed by their anti-social acts.

It appears to me that one great factor in the training of our children has been overlooked by our present educational system. Is it not possible that we have been so intent upon material and intellectual progress that we have neglected the most important side of our education. I refer to religious education in the home. The time was a few years back when almost every home had religious instruction and family prayers more or less regularly in the home circle; but since the automobile has cut down distance so materially and since the appeal of the movies has become so urgent our home life has been sadly interfered with.

In our struggle for material advancement and in our pursuit of pleasure, we have gotten away from the custom of self denial and discipline which is the only possible means of developing character. Character cannot be built up by erecting barriers in the shape of laws to correct individual conduct. It is true that there must be laws that will protect the innocent and the well-

meaning citizens against the aggressiveness of the vicious. These laws are vital to any civilization but no matter how many or how varied or how severe the laws regulating individual conduct they will not be enforced by the majority unless children are taught in the early formative years that conforming to these laws brings the greatest total amount of peace and happiness to the individual. The time to do this is with the children up to twelve years of age and the responsibility to teach and correct the child cannot be shifted to the State or to philanthropic or charitable organizations. It is one of the duties of the parents and the place it should be done is in the home.

Just now it is difficult for a young person to have definite ideals because there is no well defined moral code defined by religion. On every hand the child is denied the teachings of abstract moral sentiments because of a confusion of parts of Christian and Pagan philosophy, which are so incompatible. Every one has conflicts that arise from time to time which must be met and conquered. The conflict is not injurious but the failure to meet them face to face and thus build up character is the reason we have so many new functional cases each year.

For the guidance of parents, any State Hospital physician can tell you he has many cases under his care the result of an emotional shock of a sexual nature experienced during the ages from seven to thirteen or fourteen years.

Now do not think that I am an alarmist, that I am a pessimist regarding the outcome of the growing generation, because I do feel that the younger generation will surmount its difficulties as we have surmounted ours; but it does make one stop and think when one realizes that the problems that many of us did not have to meet until the ages of eighteen to twenty-five are now being met and must be conquered ten to fifteen years earlier in life.

Each generation, like the individual child, must meet its problems, conquer them and survive or else in meeting them fail to make the proper adjustment and go down in defeat.

Let us not be too hard upon the restlessness of the growing generation but let us admit that some of their difficulties could be more easily conquered if the present generation had attended to their home duties and responsibilities a little better.

THE EVOLUTION OF NEPHRITIS: ITS PROGNOSIS AND TREATMENT*

Part I

RENAL FUNCTION AND THE EVOLUTION OF NEPHRITIS

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Our conception of the nature of nephritis, the elements upon which an opinion as to the final outcome is based, and the principles involved in the treatment of this condition have undergone a marked change during the past ten years. This has been due chiefly to three factors: (1) the interest that has been manifested by the medical profession in hypertension, arteriosclerosis and the changes that occur in the vessels of the arteriocapillary bed as the result of inflammatory, metabolic and degenerative processes; (2) increasing information that has resulted from pathologic study of the tissues of nephritis patients (the result of this study, however, has been somewhat disappointing and in many instances has failed in clarifying our knowledge); (3) knowledge of kidney function by the concentration and secretory tests, dye function and study of the concentration of the end-products of nitrogen metabolism in the blood plasma. The kidney has lent itself particularly well to functional study.

To attempt to review the subject of nephritis in all its phases in an article of this kind would be unprofitable, if not impossible. It is unnecessary, when excellent monographs are available in the several systems of medicine. It is rather the purpose of this series of papers to bring out the high lights of normal and disturbed renal function, the evolution of nephritis from its beginning to its terminal stage, its prognosis and treatment. The writer will approach this subject, not from the viewpoint of the specialist in nephritis, but from that of the practitioner, the nature of whose work is such that he is frequently asked to give advice as to the significance and the management of this condition.

Before proceeding to the discussion of nephritis, it will be profitable to review briefly normal renal function. For our purpose it may be considered under the following headings:

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The first function of the kidney to be considered is the filtration, reabsorption and excretion of water. The present view and the one accepted by Aschoff[1] is that the glomerular function is entirely one of filtration and that of the convoluted tubule is one of reabsorption. Aschoff's views have undergone a complete change over those held by him ten years ago, prior to the delivery of his recent Harvey Lecture. At that time he considered that the first and intermediate portions of the convoluted tubule had a secretory function, while the function of the distal and transitory portion was absorption. The work of Aschoff and his associates, Suzuki and Mitamura, with vital staining of the glomerulotubular system of the kidney with lithium carmine, is responsible for this conclusion. For the details of their interesting and convincing experiments the reader is referred to Dr. Aschoff's ecture.

Aschoff's views on renal physiology are in accord with those of Cushney, Starling and Varney, and Wearn and Richards as reviewed by Hench in his recent publication.[2] Of these authors only Starling and Varney assign any excretory function to the tubule for a portion of he dye and urea. This includes the fundamental work of Wearn and Richards in catheterization of individual glomeruli of the frog and omparison with the bladder urine.

As to the function of the loops of Henle, Aschoff states that adequate experimental proof s still lacking. He advances the hypothesis that his portion of the tubular system acts as a yphon and pressure regulator system. This explanation suggests itself to him because the lomeruli lie at different levels in the cortex, the onvoluted tubules have a constant length, and he loops vary in length according to the level f the glomerulus in the cortex. My understanding of this theory is that if the glomerulus s near the kidney surface, the loop is short; if lies deep, the loop is long, so that the lengths f the individual tubular systems between lomeruli and intercalary tubules are approximated and the hydrostatic pressure is thereby qualized, or nearly equalized. This explanation ay not be as uncomplicated as above stated. he work of other investigators has brought out e fact that while some glomerulo-tubular sysms are functioning, others are resting. This ggests that there are other factors involved. That the filtration and absorption function of the kidney is an important one is apparent when we consider that for every sixty-two liters of filtrate passing through the glomeruli, sixty-one are reabsorbed and one liter passes out as the solvent for the non-threshold substances in the urine. The breakdown of this function determines to some extent whether or not edema accompanies nephritis.

Mix[3] states this very succinctly by saying that the clogging of the glomeruli results in water retention and edema and that if the filter works and resorption fails, we have polyuria. Here, again, the explanation must be more far-reaching to encompass all the factors involved; namely, salt distribution in the tissues, permeability of the tissue capillary threshold, osmotic tension, tissue cell metabolism and colloid chemical reactions.

A second kidney function is that of salt excretion or removal of salt from the blood plasma. The kidney is very economical in the exercise of this function and the salt concentration in the urine is much below that found in the blood plasma. A large portion of the salt is therefore reabsorbed. The salt concentration in the blood plasma is rather labile and salt passes from plasma to tissue and from tissue to plasma rather easily. The plasma may be said to be a transfer station between kidney and tissue and probably for this reason estimation of plasma chlorides in nephritis and edema has been rather disappointing and inconclusive.

A third function is the excretion of the end-products of protein catabolism. These substances are urea, uric acid, creatin, creatinine, amino acids and the "rest nitrogen" or unidentified nitrogen fraction. All are waste products and have no further use in the human economy, and therefore are not reabsorbed, but are excreted in a higher concentration than they are found in the blood plasma.

A fourth function is the recovery of the threshold substances or substances useful to the human economy. The important threshold substances are dextrose, chloride, sodium and potassium. Dextrose possesses a high threshold, while that of the last is relatively low.

A fifth function is the elimination of non-threshold substances, or those of no further use to the body. The important non-threshold substances are urea and other nitrogenous end-

products already mentioned, sulphate and phosphate. It will be seen from this, that the convoluted tubule is endowed with a highly selective function in retrieving from the filtrate what is to be salvaged and allowing useless substances to go by.

It is apparent also that none of the urinary solids is formed or synthesized by the kidney and that it is an excretory organ almost entirely. Hippuric acid and possibly a small part of the urinary ammonia[4] are the only substances formed in the kidney and for these substances alone it may be designated as a secretory organ.

The sixth and last function of the kidney to be considered is the assistance it renders in the maintenance of acid-base equilibrium by excretion of phosphate. This is a very delicately adjusted body function and life depends upon it. The reaction of the blood plasma is slightly more alkaline than distilled water and its indicator range is between methyl orange and phenolphthalein. Measured in terms of hydrogen-ion concentration, the normal PH value of the blood is PH 7.3 – PH 7.5. If it drops below PH 7.0, coma develops, and if it rises above PH 7.8, alkalosis supervenes, accompanied by symptoms of tetany. Any figure falling outside of these extremes is usually incompatible with human life.

It is a temptation to enter into a general discussion of this subject from the clinical and physiological aspects, but that would extend beyond the scope of this article. I shall confine myself as much as possible to the part in which the kidney is involved.

The kidney assists in keeping the blood alkaline by excretion of phosphate. Since the ingestion of meat, cereals and salt increases the acid, and fruit and vegetables the alkaline tide of the blood, the kidney is constantly endeavoring to meet this change in acid-base equilibrium produced by variation in diet. It accomplishes this by increased excretion of phosphate when the first-mentioned foods overbalance the diet. The O_2 and CO_2 respiratory exchange is the other chief factor involved in maintaining this equilibrium. Increased respiratory exchange decreases acidosis. In the terminal stages of nephritis, when the kidney is no longer able to eliminate phosphate, acidosis results and a persistent alkaline urine in chronic nephritis is a finding of grave import. If its significance is passed over, a sense of false security may further be entertained by the disappearance of the albumin, unless one takes great care to render the specimen acid. The alkaline reaction produces a disappearance of the casts, also.

DISTURBED KIDNEY FUNCTION

Disturbed kidney function produces in the nephritic patient abnormalities in the excretion of water, salt and nitrogen. We may have a retention of any one or all of these substances, which is the usual finding, but we may also have a hyperexcretion of water, as in chronic nephritis without edema. Abnormalities of excretion of water and salt are closely interdependent. Dr. O'Hare,[5] in a series of experiments in 1916 showed that water and salt excretions obeyed similar laws and in twenty-six out of thirty-two cases of nephritis were parallel. The nitrogen curve did not follow so closely, however. The result of his experiments showed that the excretion of salt is more quickly and seriously affected than that of water and the ability to excrete nitrogen is retained for a much longer period. A rather striking feature about nephritis is that the ability of the kidney to excrete nitrogen may be entirely disassociated from its water and salt function. This condition obtains in subacute nephritis with edema. (Here the nitrogen function is normal and the water and salt functions are greatly impaired.) In the most severe cases, however, there is usually a fixation of all three elements.

The occurrence of disturbed water, salt and nitrogen excretion in the different types of nephritis may be represented by the following table. This table is based on the nomenclature used by Dr. Christian in his Clinical Classification of Nephritis.[6]

DISTURBED KIDNEY FUNCTION IN NEPHRITIS

1. Water excretion
   1. Retention { Acute nephritis with edema; Subacute nephritis with edema; Mercurial poisoning without edema }
   2. Hyperexcretion (Chronic nephritis with polyuria.)
2. Salt excretion
   1. Retention { Acute, Subacute, Chronic nephritis } with edema
3. Nitrogen excretion
   1. Retention { Acute nephritis, Chronic nephritis } with renal insufficiency

In order to understand the progress of nephritis one must have a conception of what constitutes the condition known as renal insufficiency. This condition pertains to the breakdown of the ability of the kidney to eliminate nitrogen with or without impairment of the water and salt elimination. The nephritic patient with renal insufficiency presents the following objective findings, and it is on these findings that the present status, outlook and treatment of the patient must be largely determined.

FEATURES OF RENAL INSUFFICIENCY

1. Elevation of blood pressure (except in rare cases of nephritis, massive destruction of kidney tissue due to infection and at times renal insufficiency due to back pressure).
2. Diminished phenolsulphophthalein excretion.
3. Progressive anemia (due to diminished blood formation).
4. Retention in blood plasma of the nitrogenous end products.

By a careful and repeated monthly check of the first three findings it is possible for the practitioner to obtain information of great value and to predict with reasonable accuracy the development of renal insufficiency. This can be done without recourse to blood chemistry, if facilities for this additional test are not available. A steadily rising blood pressure, a dropping phthalein output and a progressive anemia, all indicate that the nephritis is pursuing an unfavorable trend and is most probably heading toward renal insufficiency. To avoid erroneous conclusions, the exceptions stated under blood pressure elevation must be kept in mind.

The value of anemia as an index of renal insufficiency is somewhat mitigated by its rather tardy appearance. Brown and Roth[7] have shown that it does not appear until at least from four to six weeks after the onset of renal insufficiency and may not be demonstrable until a longer interval has elapsed.

It must be admitted that the phthalein test, combined with the blood urea nitrogen or non-protein nitrogen, is the most reliable method of recognizing early renal insufficiency. My experience with these two tests, during my association with Dr. James P. O'Hare in the Renal Clinic of the Peter Bent Brigham Hospital, has convinced me that the result of one of these two tests may predict with reasonable accuracy the result of the other. This relationship can be approximately stated according to the following inverse table:

Comparison of phthalein and blood urea nitrogen values, arranged according to 10's:

	%	Mgms. per 100 c.c.	
Phthalein	40's*	10's	Blood urea nitrogen
"	30	20	
"	20	30	
"	10	40	
"	—10	50+	

From the above it may be seen that when the phthalein is in the 40's the blood urea nitrogen is in the 10's, and when the phthalein drops to the 30's the blood urea nitrogen rises to the 20's and continues in this inverse ratio. In numerous cases that developed renal insufficiency under our observation, we saw the phthalein decrease and the blood urea nitrogen increase according to this ratio. At times, when a patient first comes under observation, the blood urea nitrogen may be high and out of proportion to the phthalein, but further inquiry will usually show that the patient has not been well managed and that excess protein has been allowed in his diet.

In stressing the accuracy and advantages of the combined phthalein and blood urea nitrogen tests, it is not my purpose to detract from the importance of the phthalein test, but rather to emphasize its utility when combined with blood pressure determination and blood counts done together at regularly repeated intervals.

Before entering upon the hazardous undertaking of tracing through the evolution of nephritis, it is necessary to comment briefly upon cast formation and the significance of the various types of casts found in urinary sediments. According to Cushny[8] the formation of casts may be summarized as follows:

1. Leakage of hyaline material through glomeruli.
2. Above is coagulated by increasing acidity of filtrate, producing the matrix of the cast.
3. Type of cast determined by activity of tubular degeneration.
4. Activity of renal lesion "graded down" according to type of casts as follows:

*40's include 40-49, and so on down through the table.

Fatty and waxy casts do not fit in the above scheme, but both occur in extensive and moderately active renal degeneration. The fatty casts, particularly, occur in nephrosis and subacute nephritis with edema. The broad, waxy casts, according to Addis,[9] are the forerunners of uremia. I have, however, seen this type of cast in fairly large numbers in a case of subacute nephritis with edema with a fairly normal renal function. From what has been said concerning activity of renal degeneration and casts when the sediment is composed of all types of casts, we infer that the renal degeneration is active in some parts of the kidney and inactive in others.

In tracing through the evolution or progression of nephritis, I shall touch upon only some of the outstanding features.

Acute nephritis, when it comes under the observation of the clinician, can usually be recognized as belonging to one of three types: (1) essential edematous nephritis; (2) hemorrhagic nephritis; or (3) nephrosis. The outstanding clinical features of these three types are enumerated in the table below.

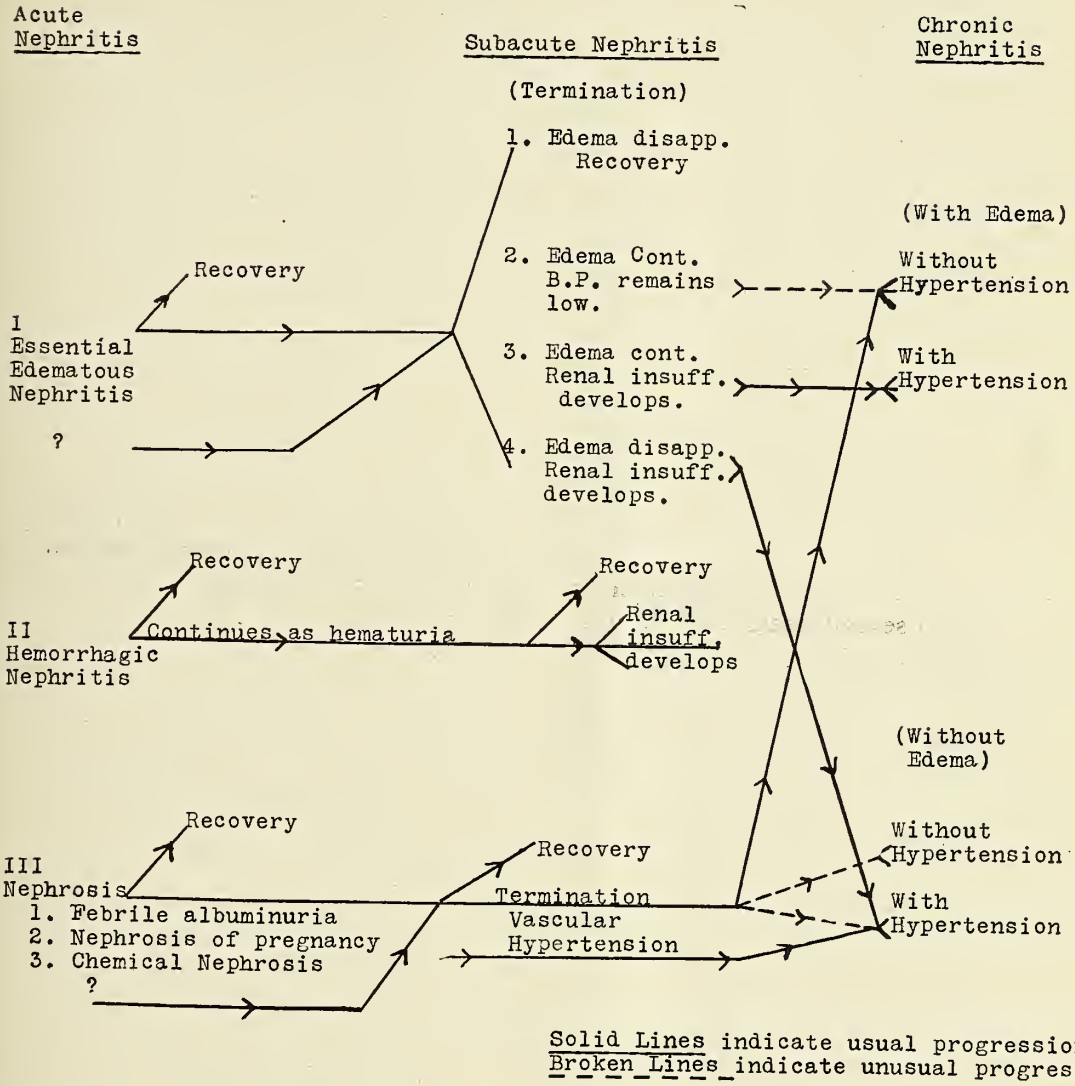
It is unnecessary to make any extended comments on this table, except to emphasize that in the essential edematous nephritis the sediment shows a characteristic picture, in that the *cellular elements predominate*, while casts are found in moderate numbers and are of the acute degenerative type. In hemorrhagic nephritis the *red cells predominate in the sediment* and the relatively few casts are usually brown granular and red blood cell in character. At first glance it may appear as if one were dealing with a pure hematuria and, as O'Hare and Walker[10] have pointed out, casts may be found only after careful search and then only around the edges of the cover glass. In nephrosis the sediment is likewise characteristic in that the *casts predominate* and are of one type according to the acuity of the renal degeneration (*e.g.*, there may be nearly all coarse brown granular casts) and a *striking absence of cellular elements*. In addition to the findings in the sediment, a normal or subnormal blood pressure early in nephritis indicates the possibility of its being a nephrosis.

TABLE I

OUTSTANDING CLINICAL FEATURES OF THE ACUTE NEPHRITIDES

	Essential Edematous Nephritis	*Hemorrhagic Nephritis*	*Nephrosis*
1. Frequency	2 to 1		Rare
2. Etiology	Strep. inf. 2/3 other inf. (Typhoid, pneumonia). Malaria, syphilis 1/3.	Same	Pneum., Dipth., syphilis and other non-strep. inf. Tuberculosis
3. Onset	Grad. to fulminating	Grad. with smoky urine	Grad. to sudden
4. Blood Pressure	Moderately elevated	Same	Normal or subnormal
5. Edema	Marked	Less	Moderate and fixed
6. Urine Quantity	Oliguria	Less	Oliguria
7. Urine, Sp. Gr.	High	Variable, less and may be low	High
8. Albumin	+ to +++	+ to ++	+++ to ++++
9. Casts	Moderate number of the acute degenerative types	Few casts, usually brown, granular and R. B. C. casts	Numerous acute degen. types with tendency to one type
10. Cellular Elements	Many W. B. C., R. B. C. and small round cells	Red blood cells predominate	Few cellular elements an outstanding feature.

TABLE II



It follows that careful study of the sediment yields much valuable diagnostic information and it also enables the clinician to gauge the activity of the degenerative process in the kidney. This study of the sediment should be repeated, and, as Dr. O'Hare has frequently stressed, should be carried out by the clinician himself. A laboratory report, no matter how well prepared it may be, cannot compare with the physician's visualization of the findings in the microscopic field, aided by proper interpretation.

To trace through the progression of nephritis I find it expedient to make use of a diagram which at first sight appears rather involved, but which suits the purpose better than any that I can devise. This represents Dr. O'Hare's ideas on the clinical classification of nephritis, somewhat modified by the author.*

With the aid of this diagram it is possible to identify the majority of cases of nephritis as belonging to one of three types and to follow the progress of the patient and the route that he travels. This cannot be predicted at the beginning and the whole picture may require several years for completion.

This is most fully appreciated when one has an opportunity to carefully study a nephritic patient in a large out-patient clinic where every type is seen and followed over an extended period of time. Not infrequently a patient who

*This diagram is published with Dr. O'Hare's permission, and it should be mentioned that in a personal communication he stated that it could be somewhat simplified.

appears to be following a definite path to an expected termination changes his course of progress and travels to an unlooked for termination.

Referring to the diagram, first we shall direct our attention to essential edematous nephritis. It may and often does terminate with recovery in the acute stage, with subsidence of the edema, disappearance of the albuminuria and cessation of the renal degeneration or clearing of the sediment and return of normal function. It is unwise to reach this conclusion until after many months have elapsed and the patient has gone through at least one acute upper respiratory infection without a flare up. If recovery does not take place in the acute stage the nephritis progresses to the subacute stage. It is not always possible to draw a definite line of demarcation between these two stages. However, when there is persistence or return of the edema and renal degeneration continues after renal function has returned to normal several weeks after the acute onset, the nephritis may be said to be in the subacute stage. There is also a group of cases having an ill-defined insidious onset that first come under observation with the features of subacute nephritis without passing through the acute stage. When nephritis is in the subacute stage it remains so as long as renal degeneration remains active and renal function remains normal, or nearly normal. The time element does not determine when it becomes chronic. It is possible for it to remain in this stage for several years and still be subacute nephritis. Subacute nephritic has four modes of termination: (1) Recovery may take place with disappearance of the edema and albuminuria and cessation of renal degeneration. This fortunate turn is rather unusual. (2) The edema continues, the blood pressure remains low and renal function remains normal with cessation of the active renal degeneration (hyaline casts take the place of the degenerative casts) and we have chronic nephritis with edema, without hypertension. The type of cast found is the distinguishing feature. This also is an unusual method of termination. (3) Edema continues, renal degeneration subsides, with elevation of blood pressure and development of renal insufficiency. This is known as chronic glomerular nephritis in many clinics and is the usual method of progression. (4) The edema disappears, renal degeneration ceases and renal insufficiency develops. Because of the disappearance of the edema, the patient is much encouraged and the marked clearing up of the sediment and diminished albuminuria may cause the medical attendant to feel optimistic, while in the kidney the process of contraction with terminal sclerosis is beginning to slowly shut down kidney function. To see the first few patients pass through this stage of their nephritis leaves a lasting impression. It emphasizes the important part that renal insufficiency plays in determining the outcome. It is my intention to discuss the prognosis of nephritis later, but I cannot desist from advising extreme caution in making an optimistic prognosis in such instances, until one sees what happens to the blood pressure and renal function.

Hemorrhagic nephritis has certain features already pointed out that warrant its recognition as a clinical entity. Recovery may take place in the acute stage with the complete disappearance of albumin, casts and red blood cells from the urine. One must, however, exercise great caution in pronouncing a cure, and repeated examinations of the urine over a period of several months must show entire absence of red blood cells. Cure in the acute stage is a slower process than in the essential edematous nephritis. If recovery does not occur in the acute stage, hemorrhagic nephritis may continue as a hematuria for a period of one to two, or even three to four, years. No doubt, many of the cases diagnosed as "essential hematuria" will on more critical study be found to be hemorrhagic nephritis. Recovery may take place in the subacute stage after a long period of hematuria, or an acute infection or other insult may precipitate the onset of renal insufficiency, which increases until death of the patient occurs.

Acute clinical nephrosis, while possible, is very rare. It is more likely to be insidious in onset and be recognized first in the subacute stage. In my personal experience, the only two cases seen of the onset of this type came on several weeks after an attack of pneumonia. When the subacute stage is reached, recovery may occur (in my own limited experience I have not seen it) or the condition may terminate as a chronic nephritis with edema, without hypertension. The urine at this stage shows abundant albumin and hyaline casts with very little else in the sediment. A more unusual termination is a disappearance of the edema with the above picture; then the

result is a chronic nephritis without edema and without hypertension. The third and rather unusual termination is disappearance of edema, cessation of renal degeneration, with development of hypertension and renal insufficiency; namely, chronic nephritis with hypertension, without edema.

Febrile albuminuria, nephrosis of pregnancy and chemical nephrosis are special types of acute nephritis and need not be discussed in this paper. Likewise, essential hypertension with slowly progressive renal insufficiency, terminating as a chronic nephritis, will not be discussed. It is a chapter in nephritis by itself. The arteriosclerotic kidney found in decrescent arteriosclerosis occupies a similar position.

When nephritis has reached the chronic stage, if death does not occur because of renal insufficiency and cardiovascular and cerebral complications, the patient may outlive his nephritis and death may occur as a result of intercurrent infection (pneumococcic and streptococcic infections, particularly) and intercurrent disease.

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Note: In the preparation of this and the ensuing manuscripts on the Prognosis and Treatment of Nephritis, I have drawn on my experience with clinical material in the medical wards and Out-Door Renal Clinic of the Peter Bent Brigham Hospital, Boston. Many of the viewpoints concerning nephritis which I have endeavored to express are those that were held there during my period of connection with that institution (February, 1924, to July, 1925). However, these viewpoints have been somewhat modified by my own impressions and interpretations. For these departures I wish to assume personal responsibility.

H. O. A.

ALCOHOL AND ITS EFFECTS ON THE NERVOUS SYSTEM*

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Sir James Crichton-Brown at the Lady Priestly Memorial Lecture in London said, "There is no subject outside religion about which there has been more heated and acrimonious controversy than alcohol. On the one hand it has been extolled as the elixir of life, and on the other denounced as a deadly poison." It will not be within the scope of this paper to weigh the evidence for and against alcohol as a beverage or a food, but in view of the facts about to be presented it will be seen that the subject is worthy of the consideration of every medical practitioner. These facts are as follows:

During the first five years immediately preceding the beginning of prohibition in this country, there were at the Ancker Hospital in St. Paul just 21 deaths from acute and chronic alcoholism. During the first five years following the beginning of prohibition enforcement there were 53 deaths, or about two and one-half times as many. Over 60 per cent of these occurred during the first two years of that period. During the five years preceding prohibition there were no deaths from wood alcohol poisoning. During a similar period following prohibition there were 14 deaths from this cause. In Chicago the alcoholic mortality in 1923 had reached pre-war figures.[1] Another reason why the study of alcohol demands our interest is that the type of poisoning produced by present day liquors is somewhat different from that seen in pre-prohibition days. This new type is popularly known as "moonshine poisoning" and has been responsible for some very curious and interesting clinical phenomena. These will be dealt with later.

There has been some difference of opinion concerning the pharmacology of moonshine whisky. Professor Brown,[2] who experimented with bootleg liquor prepared in his laboratory at the University of Minnesota, found that the toxic effects on frogs were practically the same as those of a corresponding alcoholic strength of government alcohol. The Bureau of Chemistry also tested

*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, Oct. 18, 1926.

600 samples of unadulterated bootleg liquor and were unable to find anything to account for its toxicity. From his toxicological work on individuals who had died after drinking moonshine whisky, Professor Brown concluded that death was due to an excessive amount of alcohol rather than to any impurities that may have been present. Gerty,[1] on the other hand, believes that moonshine poisoning is alcoholism of a modified or aberrant type and that various aldehydes are responsible for the increased toxicity. He states that this type of poisoning differs from ordinary alcoholic poisoning in that it takes effect more rapidly and the patient is brought to the hospital sooner because of the gravity of his symptoms. In other words, a smaller amount of the prevalent beverage is required to incapacitate. He also states that the effect is more profound and more often fatal, mental deterioration is commoner after a few sprees, and that pneumonia and alcoholic cirrhosis do not appear so frequently. Our experience at the Ancker Hospital bears out his statement with regard to alcoholic cirrhosis. The average number of admission for this condition per year for five years before prohibition was 17.6. Since the beginning of prohibition it has fallen to 1.8.

Undoubtedly methyl alcohol (wood alcohol) is purposely or unwittingly present in many beverages and has been responsible for many cases of alcohol poisoning. Since it is destroyed or even excreted with great difficulty and remains incompletely oxidized as formic acid and probably formaldehyde in the body for a long time after ingestion, it is undoubtedly more toxic than an equal quantity of ethyl alcohol, which is a food and can be oxidized completely. Since the latter may be "denatured" by the addition of highly toxic substances and this commercially available form re-distilled to make bootleg liquor, one might expect to find some of these poisons in it. However, according to Hunt,[3] the most common ingredient present in moonshine whisky which is not found in good whisky is acetaldehyde. The toxicity of this substance is comparatively low, and in the samples analyzed one would have to consume approximately his own body weight of moonshine to get a lethal dose of acetaldehyde. In this event, he obviously would die of alcohol poisoning long before a killing dose of acetaldehyde could be taken.

Hunt agrees with Brown in the belief that the toxic effects of various beverages on laboratory animals can be explained by the amount and concentration of alcohol taken. The depth of intoxication and the danger to life depend upon the concentration of alcohol in the blood, and this in turn depends upon the amount and concentration of alcohol taken. Since the margin between profound intoxication and death is a narrow one, it is easy to see how a large amount of highly concentrated alcohol, such as is found in our present day moonshine, taken in a short period of time can produce death.

However, that alcoholic distillates obtained from a fermented mixture of corn meal and sugar are more toxic than an equal amount of ethyl alcohol has been well shown by MacNider[5] in his work on dogs. This investigator has shown that ethyl alcohol in normal animals is but slightly nephrotoxic, while an alcoholic distillate obtained from a fermented mixture of corn meal and sugar develops evidences of a nephrotoxic action which is manifested by changes in the urine. He believes that this toxicity is not due primarily to the presence of ethyl alcohol, but to some other undetermined substance. It would seem from the peculiar clinical effects of some of these distillates on humans that this view is correct.

That the present day moonshine is a quick killer is seen from a study of various hospital statistics. This shows that there has been a marked decrease in the number of cases of portal cirrhosis and delirium tremens with a much smaller decrease in the number of cases of acute and chronic alcoholism. At the Ancker Hospital the average number of cases of portal cirrhosis per year has decreased 91 per cent since prohibition, and of delirium tremens 65 per cent. However, the number of yearly admissions for acute and chronic alcoholism has decreased only twenty-two per cent. Gerty's statistics at the Cook County Hospital in Chicago show a similar result. The inference that can be made from this is that the alcoholic patient of today dies as a result of his habit before the end-results of chronic intoxication can develop.

Nugum and Maner,[4] from a study of the blood chemistry in chronic alcoholism, believe that the early chemical changes in the blood are the stepping stones to the gross changes in the brain and other tissues. In addition to edema of the meninges, the brain tissues of persons dying of

delirium tremens have been found to have a markedly increased hydration capacity, that is, there has been cerebral edema. This is thought to be due to an acidosis and the belief is substantiated by the fact that the same increase in hydration capacity is found in persons dying of uremia—a condition in which acidosis is known to exist. Post-mortem examinations of rabbits in which a condition of chronic alcoholism had been experimentally produced showed that while cerebral edema was not always found, the animals' brains had an increased hydration capacity, sometimes to a surprising degree. At the same time a definite acidosis was shown to exist in rabbits in which chronic alcoholism had developed.

It is the writer's opinion that in addition to this, the direct action of alcohol on the cerebral cortex is responsible for many of the mental symptoms appearing in acute and chronic alcoholism. It is a known fact that alcohol can be recovered from the cerebro-spinal fluid in cases of acute intoxication. Since the higher psychic functions are dependent upon the integrity of the cerebral cortex, it is very probable that many of the psychic manifestations of acute and chronic alcoholism are due to the inhibition of these structures through direct contact with the drug. This view also serves to explain the degenerative cell changes found in the cerebral cortex.

The time allotted for this study does not permit of an exhaustive discussion of the psychopathology of alcoholism. However, it is the writer's belief that the uncontrollable desire to drink is a psychological state upon which there has been superimposed a physical defect. According to Dixon[6] the drink habit has undoubtedly served its purpose in the past as one of the many forms of individual protection resorted to by nature to save men from diseases associated with the herd instinct. Dr. William Mayo once said that the consumption of billions of gallons of wine had saved the people of France and Italy from extinction, as they could not have lived had they drunk their polluted water. With the growth of hygiene, there has been a fall in the consumption of alcohol. In other words, alcohol originally served man as a protection against the baneful influences of his environment. At first these influences were physical. Today they are psychic. Our present rapid civilization demands that in order to succeed the individual must use every talent that he possesses. When the pressure of reality upon him becomes too great, the inadequate personality seeks retreat in various ways. One of these is the solace of the brimming cup. Under the influence of alcohol the jagged edges of reality no longer open psychic wounds, the real person is liberated from the restraints and demands of social customs, and his emotions and primitive instincts are allowed to have full sway. The inhibitions which normally govern the herd, sex, and ego instincts are removed, and an artificial relaxation is induced. The burdens, anxieties, cares and worries of everyday life disappear and the irritability of a super-sensitive nervous system is diminished. In a certain number of individuals alcoholism may be the expression of a true psychosis. We have observed a number of cases of melancholia in which the alcoholism was the result rather than the cause of the morbid mental state, and its symptoms completely clouded the picture for some time.

We see, then, from the foregoing statements that alcoholism must not be regarded as a mere form of vicious indulgence, but as a manifestation of a morbid state. Repeated administration results in the production of a physical condition which makes its further use imperative. Sir John O'Connor[7] found at operations upon alcoholics, cirrhosis of the great omentum similar to cirrhosis of the liver, induration of the bowel wall, and pericolitis. As he so aptly expresses it, "a continuous 'itis' from lips to anus resulting in spasmodic pains with general abdominal discomfort and black excrement, the morning mouth, and a feeling like nothing until resuscitated by the matutinal gin and tonic."

That continued and prolonged abuse of alcohol can result in various forms of insanity has been known ever since the early days of modern psychiatry. However, since the introduction of new and more toxic forms of alcoholic beverages, the old classifications of these insanities are no longer adequate. There is a blurring of the picture through all of the groups and, although the classification is essentially the same as it formerly was, the cases often are atypical and cannot be clearly designated as belonging to any one particular group. Probably the most practical clinical description of the alcoholic insanities is the one given by Bevan Lewis in his text book. This author groups them as follows:

1—Acute alcoholic insanity

a. Transient mania, occurring during a bout.

b. Acute alcoholic hallucinosis.

2—Chronic alcoholism

a. Amnesic form with or without delusions. Under this group may be included the Korsakow's psychoses.

b. Chronic delusional form. This usually takes the form of a paranoia (alcoholic paranoia) and the picture may also include hallucinations of sight or hearing.

c. Dementia. This may vary from a mild state of mental enfeeblement to complete amentia, followed by death.

Satisfactory as Lewis' classification may appear to be, it will be seen from some of the following case reports that in this era of moonshine and wood alcohol we encounter clinical pictures of such a protean nature that they do not fall into any of the above-named groups. The writer expresses his gratitude to Dr. E. M. Hammes of St. Paul for aid in selecting the illustrative cases.

Case 1.—An attorney, aged 52, was brought to us on August 1, 1925, with a history of having indulged in intermittent sprees for the past twenty-five years. Two years prior to his admission to the hospital, after a prolonged drinking bout, he had an acute mental upset lasting from two to three weeks. The details of this were not available. The present attack dates back to July 10, 1925 (about three weeks before we saw him) when he became intoxicated. The amount and kind of liquor consumed was not known but the patient's condition soon became such as to demand medical attention. He developed a marked confusion, was noisy and restless, and refused all food. Upon his admission, his condition was found to be serious. He was in a muttering delirium with a pronounced occupational coloring. That is, he was constantly talking as if he were trying cases in a court room. Most of the time he was attempting to get out of bed, and it was necessary to put him into restraints. He was completely disoriented in all spheres. The neurological examination was negative for organic signs. His temperature was subnormal, the pulse varied between 80 and 90, and he vomited almost continuously. His urine contained albumin and casts, and the patient appeared to be very toxic. The spinal fluid was under slightly increased pressure but was otherwise negative. A spinal drainage was done with very little benefit to the patient's condition. He refused all nourishment by mouth and had to be tube-fed. Ten days after admission the picture was complicated by the appearance of an infectious enteritis which resisted all forms of treatment for two weeks and then cleared up. On August 30th, twenty days after admission and nearly six weeks after the onset of the mental symptoms, the picture suddenly changed from one of extreme restlessness and confusion to one of marked depression colored by delusions of a persecutory nature. Some of his formulations were almost nihilistic. He said that he was dead, that food did not exist, and that the world was empty. He had crying spells, tried to get out of bed, and refused all food for a time. This lasted until September 12th, when his mental condition began to clear up, and, on that day, after having spent forty-two days in the hospital and sixty-two days in a totally irrational state, he was well enough to sit up in a wheel-chair for one hour. On this day he was oriented for the first time. From then on he continued to show improvement and on November 17th, after three and a half months in the hospital, was discharged in excellent physical and mental condition.

The interesting features of this case were the unusual mental picture at the onset, changing to an entirely different one six weeks later, the unusually long duration, and the absence of any residual defects after the patient had recovered.

Case 2.—This case was a very puzzling one in which the diagnosis was not made until the disease was very well advanced and a history of alcoholism had been obtained from a friend of the patient. The patient, a female, aged 20, was first seen by Dr. Hammes in consultation with Dr. Harry Oerting on June 8, 1926, at which time she was acting in a very peculiar manner and complaining of severe headaches. Many of the symptoms appeared to be hysterical in nature, and others were strongly suggestive of dementia precox. At times she would become excitable, talk in a senseless manner, and upon one occasion barricaded the door of her room without any apparent reason. Two days after admission, before any definite diagnosis could be made, her mother took her home. She was next seen one week later at a different hospital, at which time she was semi-stuporous and complaining of excruciating headache, blurring of vision, vertigo, photophobia, and tenderness over the right side of the scalp. She was vomiting much of the time. Her temperature varied around 99.2 degrees, axillary, the urine was negative except for an occasional trace of sugar, and the cerebro-spinal fluid was normal. The neurological examination was negative except for some labial herpes and hyperesthesia of the extremities. A tentative diagnosis of acute epidemic encephalitis was made, with a toxic psychosis regarded as the second possibility. The patient's condition progressively grew worse, the vomiting increased, and she became irrational and more toxic. She screamed and cried alternately, complaining of terrific headache, trying to climb out of bed, and shouting that she wished she were dead. It was necessary to give her glucose solution intravenously and keep her on continuous proctoclysis because of her alarming condition. Repeated administrations of morphine were required to keep her from disturbing other patients in the hospital and at the same time wearing herself out. On the third day she had visual hallucinations and complained of seeing relatives who had been dead for a long time. On the fifth day she was tube-fed because she refused nourishment and was generally resistive. The pain in her head still was excruciating, but her temperature had returned to normal. On the seventh day her mental condition began to clear up and there were periods during which she was quite rational and cheerful, and she began to improve in all respects. She

insisted upon going home, and on the ninth day became very much upset because she was not permitted to do so. She became sullen and stubborn, refused to take medicine or allow her temperature to be taken. She cried loudly, would not remain in bed, ran to the window and had to be carried back by the nurses. She developed a rather severe headache, and on the next day her mother took her home against medical advice. She was next seen at her home on about July 1st, one week after leaving the hospital, at which time she was complaining of severe headache and vertigo. She was sullen, abusive, stubborn, and uncoöperative. She had slight rigidity of the neck and a strongly suggestive Kernig. It was at this time that it was learned that the patient was in the habit of going out on cocktail parties with friends, and that prior to her original trouble she had been drinking rather heavily.

The interesting feature of this case was its close similarity to encephalitis. To produce the amount of cerebritis that this patient showed, the alcohol she drank certainly must have been a highly toxic product. She has been in the office recently and feels well in all respects.

Other observers have reported cases similar in some respects to the two given above. Barbash[8] reports a patient who, after drinking moonshine whisky, showed an acute delirum during which he chattered aimlessly, was completely disoriented, and practically blind. On the second day he developed signs of meningeal irritation, a positive Kernig and a positive Babinski. On the ninth day he developed a thrombosis of the arteries of his right forearm, necessitating amputation. At the time of Barbash's report the patient had recovered except for a residual impairment of vision and some slight mental confusion. Lemchen[9] reports a period of three months' amnesia following a moonshine debauch. This patient had a picture similar to a Korsakow syndrome including the peripheral neuritis, but differed from a true Korsakow in that she recovered without any dementia and with good insight.

The following two cases illustrate how alcoholism may be the result of a preëxisting melancholia. Both of these patients were sent to us as alcoholics but careful analysis of their histories revealed the fact that definite mental symptoms had existed before the patients began to drink.

Case 3.—A male, aged 58, was sent to us for treatment for chronic alcoholism. His history showed that during his early days and until the time he was forty-five years of age he had been a moderately heavy drinker. At forty-five he stopped drinking altogether. Early in 1926 he met with some financial reverses and as a result became depressed. Having a wife and six children to support and being without adequate means constituted a very trying situation with which he felt unable to cope. He was discouraged, disconsolate, and hopeless. His appetite failed him, he could not sleep and began to lose in weight. He had crying spells and was afraid that he was going to die. In April, 1926, he began to take a small drink of whisky every day to "take the edge off his nerves." After a short time he found that one daily drink did not suffice, so he took two. From then on his daily requirement became greater and greater until finally he was drinking about a quart of whisky a day. The result was that his melancholia became worse and in addition to that he developed the tremors and gastro-intestinal manifestations of chronic alcoholism. He was sent to the hospital, where, as soon as the alcohol was eliminated from his system and proper reconstructive treatment instituted, he began to show improvement. His nausea and vomiting stopped, the tremor disappeared, and the patient looked at life from a different view-point. Under careful psychological guidance the melancholia began to lift, the patient became more cheerful and hopeful, regained his self-confidence, and at the present writing is about ready to be discharged from the hospital. He states that he feels better than he has for the past thirty years.

Case 4.—A woman, aged 43, was admitted to the hospital October 28, 1924, for alcoholism. Her husband stated that for six months prior to admission the patient had "not been herself." She was subject to moody spells during which she would be depressed and uncommunicative. She took no interest in her family, and neglected her housework. The family were sure that she was drinking and assigned all of her trouble to this. Later it was discovered that upon two occasions she had attempted suicide, once my taking rat poison, and again by trying to drink the gasoline from the storage tank of her automobile. Further inquiry revealed that during the previous year the patient's menstrual periods had become irregular and scanty, and she was having hot flashes. Upon admission she was depressed, emotionally unstable, and resentful. She objected to being in the hospital and, like so many alcoholics, denied ever having taken a drink. She expressed no actual delusions but confided that at times she heard voices calling her. She had severe crying spells for which she could give no reason except that she "felt blue and there was no use in living." Careful inquiry into her domestic affairs failed to reveal any marital difficulties or other cause for emotional conflict. The neurological examination was negative and her urine contained albumin and leukocytes. She had no appetite, complained of nausea, and her bowels were constipated. The diagnosis at first rested between that of involutional melancholia and chronic alcoholism. However, after a few weeks in the hospital when we had become better acquainted with the patient, she gave a clear history of a definite melancholia, preceding the alcoholism by a period of several weeks. As she stated, "I felt so miserable and was so blue and discouraged that I had to do something." While in the hospital she made very satisfactory progress. After a stay of approximately three months she was discharged

as cured and since then has remained perfectly well in all respects.

Peripheral neuritis always has been a well-known complication of chronic alcoholism. However, with the increase in the consumption of moonshine and wood alcohol, there has been a change in the type of alcoholic neuritis that we are called upon to see. Formerly the outstanding clinical features of this condition were motor weakness, loss of tendon reflexes, muscular atrophies, and trophic disturbances in the form of ulcers. Recently the condition has taken the form of a marked hyperesthesia with comparatively little reflex changes or motor involvement, and no objective sensory findings. Undoubtedly the hyperesthesia of the extremities in Case 2 was due to this new form of alcoholic neuritis. In most of our cases the hyperesthesia has been the outstanding feature, and at times has been so marked as to cause the patient to scream with pain even from the pressure of the bed clothes on the affected extremities.

Case 5.—A male, aged 40, was admitted to the neurological service at Ancker Hospital September 10, 1924, with a diagnosis of wood alcohol poisoning and optic neuritis. He always had been a moderately heavy drinker and for the two years prior to his admission had been in the habit of drinking a small quantity of moonshine every day. He stated that for seven weeks prior to admission he had been drinking about a quart a day. He gave as his excuse the fact that he was suffering from "neuritis of the legs" which was extremely painful. The pains would begin in the toes and extend up both legs as far as the knees. They were in the nature of a drawing, burning sensation which "made the legs feel cold all over." The day before admission he drank about one pint of a new kind of moonshine and was immediately seized with severe sharp pains in the epigastrium. It was for this that he sought medical relief. At this time he also said that for the past two months his vision had been blurred. The neurological examination at first was negative throughout. All of the reflexes of the lower extremities were present and equal and motor power was unimpaired. Aside from a marked hyperesthesia of the lower extremities, careful sensory examination failed to reveal any objective changes. After his admission to the hospital the patient continued to complain of excruciating pain in his legs. This was not relieved by the usual analgesics and heat seemed to have absolutely no effect on it. Ten days after admission he developed trophic ulcers on both feet. These became infected and it was necessary to incise an abscess on one heel. The pain continued and the patient became very difficult to handle. He was sullen, hypersensitive, abusive to the nurses, and very critical. He refused to coöperate, and insisted upon getting up and walking about the ward. He complained bitterly about his legs and insisted that he was not getting the proper kind of treatment. Because of his constant complaining and abusive manner, his name became a by-word among the nurses and interns on the service. His eyes continued to bother him and he was sure that he was going blind. He was repeatedly examined by Dr. Binger and Dr. Rothschild, consulting oculists to the hospital, and at no time was either of them able to find any change in the fundi. It became a continuous monotonous story of poor vision and pains in the legs, running from week to week and month to month. In October he left the hospital because he was not satisfied with his treatment, but he returned in three days, saying that the pains in his legs were unbearable. He denied having had anything to drink while away from the hospital, but examination at the time of re-admission showed impaired pain sense in both arms from the elbows down to the fingers, and marked hyperesthesia of both legs from the knees downward. Tendon reflexes as well as muscle strength were normal and remained so throughout. There were healed scars remaining from the old trophic ulcers. The blood Wassermann and the cerebro-spinal fluid were negative. The pain continued and the patient became very troublesome and fretful. He developed a great variety of symptoms, involving almost every part of his body. He was *x*-rayed from his head to his feet and seen by a large number of consultants, but nothing other than his peripheral neuritis ever was found. There was nothing that seemed to relieve his pain and on May 12, 1925, after about eight months in the hospital, he again left against medical advice. He reappeared two weeks later with the same old complaints and neurological examination again revealed the hyperesthesia of both lower extremities with analgesia in the hands and arms. One week later he left the hospital against medical advice and has not been seen since.

The points of interest in the above case are the duration of the symptoms and the complete absence of motor weakness or reflex changes. The patient's alcoholism undoubtedly was due to a personality defect which manifested itself also by his abnormal reaction to his surroundings while in the hospital.

Case 6.—A male, thirty-two years of age, was admitted to the hospital January 19, 1925, acutely intoxicated. He was in the terminal phase of a spree which had begun by virtue of the fact that his wife had presented him with an heir one week before we saw him, and had been continued because the patient was seeing frogs and elephants, and men with butcher knives were chasing him all over the premises. About a week after his admission to the hospital the patient's enemies retreated and the zoological display disappeared. The patient then discovered that his hands and feet were numb. The patellar jerks were sluggish and there was some diminution to pain over the outer surfaces of the legs. Aside from these findings the neurological examination was negative. The numbness continued for about two months and in the meantime the reflexes and objective sensory findings gradually returned to normal. At no time was there any motor involvement.

The cases of death from acute alcohol poisoning and of optic neuritis are too familiar to warrant discussion here. The chief object of this study has been to point out some of the more unusual clinical effects of our modern alcoholic beverages and to show wherein they differ from those of pre-prohibition days. No attempt has been made to either denounce or justify prohibition but the writer has endeavored to present some of the newer aspects of alcohol and its effects on the nervous system as they have appeared during the past six years.

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CHEMICAL EXAMINATION OF ETHYLENE FOR ANESTHESIA

In consideration of the recently reported deaths from ethylene anesthesia, the A. M. A. Chemical Laboratory decided to re-examine the brand of ethylene for anesthesia accepted for New and Non-official Remedies, namely that of the Ohio Chemical and Manufacturing Co. As the Kansas City Oxygen Gas Co. had just submitted its product to the Council, this brand was also examined. The brand of ethylene which was used in the fatal cases was not examined and is not one of the brands reported on. The specimens were examined according to the methods of New and Non-official Remedies and in addition submitted to a more delicate test for carbon monoxide. They met the standards and in none was carbon monoxide found to be present. The Laboratory recommends that physicians use only the brands of ethylene which stand accepted for inclusion in New and Non-official Remedies. (Jour. A. M. A. Jan. 29, 1927, p. 322.)

INTERRELATIONSHIP BETWEEN TUBERCULOSIS AND THE NERVOUS SYSTEM*

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Two years ago the following case came to my attention at the Parkview Sanatorium:

Case 1.—E. M., a clerk, aged 22, was unmarried and a Norwegian by birth. She had influenza in 1918 and was told she had pulmonary tuberculosis in 1920. She had been a patient at Glen Lake Sanatorium for three months that year.

The patient herself had been born out of wedlock. Her mother married another man later and the stepfather was said to have been very cruel to both her and her mother. She was a bright baby and walked and talked at two years. At the age of six, she lost her mother from tuberculosis. The patient was placed in the Owatonna State School at the age of seven but was adopted a few months later. She did not get along well but continued school and reached the third year of high school. Her employment record was unsatisfactory; she changed positions frequently and employers were not satisfied with her work.

The girl was said to have been well behaved when in school. She did not take people into her confidence, was rather reserved, had a rather sullen disposition, and was not as light hearted nor as full of fun as most children.

At the Glen Lake Sanatorium she had acted peculiarly. She herself felt strange in company with other people. She worried a great deal about sexual relations with the son of the mistress of the house where she had been employed two years previously. She expressed a desire to live alone and to dress like a boy. She was despondent, self pitying and rather melodramatic.

On November 10, 1922, she was admitted to the Parkview Sanatorium. On May 3, 1923, the house physician found that the patient was apparently in a stupor. When touched on the head by the physician, she started to talk, saying she was going to heaven. When asked what made her refuse to open her eyes, she explained that God made her do it. She was disoriented, did not recognize her physician, could not tell where she was nor could she give the date. She insisted her name was Agnes instead of Elizabeth. Four days later, she became violent, screamed loudly and resisted all nursing endeavors. When I saw her on May 10, 1923, she smiled and talked freely, seemed alert and was correctly oriented. There still was psychomotor excitation. She recalled some of her unusual beliefs and visions and now realized their absurdity. She seemed convinced in the false belief, however, that she was not sick with tuberculosis. A few days later all signs of

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mental disturbance disappeared. I saw her again in July, when she was entirely normal mentally.

Following is the case of a young woman who had both tuberculosis and mental disease, and whose family history records cases of insanity as well as tuberculosis.

Case 2.—Miss F., aged 32, single, first showed signs of tuberculosis seven years ago. In 1919, six years ago, she was committed to a hospital for the insane because of mental disease. After her discharge from there, she came to live with her father in Minneapolis. She was admitted to Glen Lake Sanatorium about a year ago. Her conduct and her talk have been peculiar all the time that she has been under observation. She exhibited impulsivity and a lack of ordinary comprehension of hospital regulations. Flushing of the face, tachycardia and weakness were very evident. She complained of having to stay in bed longer than a neighboring patient and thought her physician most unreasonable. He made her often very angry. Her mental status briefly was one of simple intellectual deterioration. Because of her poor coöperation, treatment could not be successfully carried out after complete rest in bed became unnecessary. Preferring no other type of institutional care, the father took the patient to his home.

The patient's mother had died of heart trouble. Her maternal aunt had died of tuberculosis and her only sister is now confined in an insane asylum.

Only last month a patient was referred to me because signs of psychosis were noted two days prior to consultation.

Case 3.—This girl was native born, single and twenty-four years of age. She presented a fairly typical picture of an acute mania. A year ago, she became heart-broken when her fiancé suddenly jilted her for another. It was thought that she brooded over this experience though she never said much about it to the members of her family. She seemed to lack a normal interest and activity after that episode, lost some weight and it seemed her will power was not what it used to be. However, in the spring, some three months later, she picked up and seemed about normal until July, when the mother began to note an unusual restlessness. She could not be quiet, could not settle down and this has continued ever since.

In attempting to ascertain her personal make-up, it was found that the patient had always been considered a sensible girl and quite religious. She was always thoughtful and put herself out readily for others. She could always be depended on. She was not a complainer, not given to nervousness, loved music and played the violin and sang. She was not sulky nor sullen, was well liked, a good mixer and was said to be idealistic. She was very much attached to her father. Her school progress has been good; she finished High School at eighteen and taught school one year. She had never been confined because of serious illness. The menses had always been regular. Her present physical examination reveals no somatic disease. However, her father had been found to be actively tuberculous about a week prior to the time I saw her. One aunt has been insane. According to subsequent information, the father had to be committed to the State Hospital because of active psychosis.

The question of interrelationship between tuberculosis and nervous diseases has occupied the attention of clinicians for many years. When one attempts to study in detail the many problems concerned, it soon becomes apparent that some phases are most difficult of exact interpretation.

We ask ourselves, in the first place, "Does tuberculosis cause nerve symptoms and disease?" and, next, "Do nervous diseases increase the incidence and influence the course of tuberculosis?"

DOES TUBERCULOSIS CAUSE NERVE SYMPTOMS AND DISEASE?

Physicians who spend much of their time with patients suffering from tuberculosis agree that a "nervous element" is frequently observed. I have found after studying some 200 cases that nervous complaints are comparatively frequent. Von Muralt makes the statement that tuberculous patients are seldom entirely free from nervous symptoms.

I will begin discussing the first question by referring to heredity. Kraepelin, in his eighth Edition of Psychiatrie, quotes Tredgold, who found tuberculosis in the parents of 34 per cent of his mental cases; Shuttleworth recorded 28.3 per cent and Schlesinger 24 per cent. Schott is stated to have found tuberculosis in the parents of 12.7 per cent of 209 feeble-minded women and 11.2 per cent in 604 feeble-minded men. Kraepelin hesitates to draw definite conclusions in view of the fact that no adequate comparison to similar series of mentally normal people can be made. Spratling found that 15 per cent of the fathers and 12 per cent of the mothers of epileptics suffered from tuberculosis. Kraft-Ebing, years ago, stated that tuberculosis and neuropathic predisposition paralleled in importance in the causation of mental diseases in the offspring. Pottenger quotes Jessen, who is of the opinion that diseases dependent on degeneration of the nervous system are more common in tuberculous families.

The neurological and psychiatric complications of tuberculosis may be classified under two general headings, viz: (1) those that have somatic-neurologic or local signs; (2) those that present no localizing, but general symptoms and syndromes.

1. *Somatic-neurologic, or local nerve symptoms.*

Under the first sub-classification, I wish to name the syndromes of abnormal nerve functioning due to local or reflex influences from the diseased lung. The tendency of the tuberculous patient to flushing of the cheek and ear of one side, or both, is well known. The temperature of one side of the face and neck may be higher than the other. Headache with a feeling of heat on the involved side is not uncommon. Apical lung or pleural inflammatory process irritates reflexly the cervical sympathetics, hence these vasomotor symptoms.

Pupillary changes occur with frequency during the course of the disease, probably in at least half of all cases. Often in the early stages the pupils are unusually large. One pupil may be larger than the other, and there is no regularity in persistence of the size of the pupils, for one day it may be the right, and another the left, that is the largest. Vegetative nerve disturbances in the head and neck are frequently observed, more prominent on the side where apical involvement is active. Lagophthalmos is a less common observation.

Secretory phenomena are often noted. Perspiration of one side of the face or neck only, paroxysmal perspiration in the armpits or in all areas of the skin is characteristic in this disease. Reflex symptoms are emphasized by Pottenger, viz.: hoarseness, tickling in the throat, cough, digestive disturbances, circulatory irregularities, flushing of the face and apparent anemia, chest and shoulder pains, spasms and degeneration in the costal muscles.

Disturbances of sensibility and motor functions may be directly associated with the pathological process in the lung or parietal pleura. Pains may be present at the apical region, chest wall, back, shoulder region or in the basal areas in the form of a side-stitch. Pains are frequently of a stabbing character. Deep breathing, sneezing and coughing aggravate these pains. Neuralgic pains in the shoulders, arms, and even finger tips are due reflexly to irritation of nerve filaments by neighboring inflammation. Muscles in these areas may be tender, yet no other objective sensory findings made out. Reflex hyperesthesias in the way of an uncomfortable feeling, local chilly sensation, irritation from the pressure of clothes, occur in dermal zones innervated from the spinal segment which receives the visceral sensory fibres from the lung area involved.

Pottenger has called attention to the fact that new pathological processes in the lung may reflexly induce spasm of the muscles of the neck and chest on the affected side, and, when these hypertonic states persist in chronic form, he noted that atrophy of the particular muscles may follow. Von Muralt finds muscle changes more common than the sensory zones described first by Head. He adds that in interpreting changes in the chest wall, one must not overlook the most important influence of lack of lung elasticity, pleural changes, and the connective tissue overgrowth in the diseased lobes.

Other disturbances of a less localizing, but yet of a peripheral character and due to the toxic action of the tubercle bacillus are: nervous dyspepsia, spastic constipation, tachycardia, frequent pollutions in men, heightened sexual irritability, absent or too frequent menstrual periods in women. Bradycardia may be present if the vagus is affected by an adjacent tuberculous lesion in the bronchial glands. Labile heart action, night sweats, feelings of heat and cold, etc., may come on even if pulse and temperature are normal.

F. Breuer reports pharmacological tests applied to 15 tuberculous patients. On two successive occasions 0.75 to 1.0 mg. adrenalin was injected. Aschner's reflex was tested before and after injection. Blood pressure readings were taken every five minutes. Pulse, respiration, temperature, and dermatographia were noted. On another occasion pilocarpin 7.5 to 10.0 mg. was injected subcutaneously and complete blood studies made at intervals thereafter. His conclusions are merely that advanced tuberculosis produces an upset in the sensitivity of the vegetative nervous system. Kadling believes that productive cirrhotic tuberculosis of the lungs does not disturb the excitability of the vegetative nervous system, whereas in the exudative forms, especially in the advanced stages, the excitability is much decreased. No other conclusions can be drawn, he says. Because it is impossible to tell when and where the tuberculous infection first took place, it is difficult to decide whether individuals with a weaker sympathetic system are more prone to the infection than those with the stronger units.

Pottenger says that symptoms directly due to

toxemia are those of stimulation of the central nervous system. This induces endocrine imbalance and that in turn imbalance in the vegetative nervous system. Specifically, toxemic symptoms are: malaise, lack of strength and endurance, loss in weight, headache and generalized aching, nervous irritablity, digestive disturbances, increased pulse rate, fever and night sweats. These symptoms we must note are, however, not specific for tuberculosis. Trophic disturbances, as dental caries, falling out of hair, Raynaud's disease, occur rather rarely. Oppenheim and Wolf-Eisner have called attention to the increased peripheral nerve irritability in the tuberculous manifested by the galvanic current.

Among the other localizing nerve diseases attributable to tuberculosis are peripheral neuritis, radiculitis, pachymeningitis, leptomeningitis, myelitis, tuberculoma and abscess of the brain and cord, encephalitis and polyneuritic psychosis. These complications are comparatively uncommon and yet not so difficult to interpret. In the pathogenesis of peripheral neuritis there may exist (a) reflex causes, (b) tuberculous process in tissues adjacent to the nerve (phrenic and vagus most frequently) and (c) primary parenchymatous neuritis due to the direct action of the tuberculous toxin. Lortat-Jacob reports a case of radiculitis of the lumbo-sacral region in a patient who for two years suffered from paroxysms of pain, with redness, tremor and flexion of the leg. Autopsy revealed tuberculous cavities in the sciatic sensory roots. Pachymeningitis and myelitis are induced by lesions in the adjacent spines. Only recently I had a case of paraplegia which proved to be a spinal cord syndrome following the onset of spinal caries. Meningitis, with tubercules in the pia, and inflammation and exudate involving all the meninges is encountered more frequently than the other complications mentioned in this group. Tuberculoma is difficult to distinguish clinically from neoplasm. Brain or cord abscess is not common. Encephalitis is a local complication of other brain tuberculous process. Colella reports five cases of polyneuritic psychosis presenting signs of neuritic and psychic changes. I have never seen a case of this type. They are rare, but it is interesting to know that this type of a complication does occur. Impairment of memory and loss of association of ideas are the expected mental symptoms, not different from Korsakoff's syndrome due to other toxic causes.

Anatomical changes in the brains of patients dying from tuberculosis have been described by Nissl. He has shown meningeal and vascular changes, and pronounced degeneration in the cells of the frontal lobes. Whether these changes signify perhaps only the effect on the central nervous system of a chronic debilitating disease rather than specific action of the tuberculous toxin is a matter not yet entirely freed of speculation.

2. *General nervous or mental syndromes.*

Then we come to the second great group of nervous diseases, those that present only general symptoms, the psychoses, psychoneuroses, defective states and epilepsy. Here we find more difficulty in determining the relation of any effect from tuberculosis.

Psychoneurotic symptoms, such as fatigue, increased sensitivity, irritability, lack of usual self-control, disturbed sleep or insomnia, lack of ordinary capacity for decision, euphoria, heightened suggestibility, anxiety states, I have found to be very frequent. Here, however, one must note the probability that the patient's inborn tendencies may only be exaggerated.

True, some tendencies are brought out that were never noted during the normal pretuberculous state. Psychogenic factors in the production of the minor personality changes have been emphasized by Jeliffe and Evans. A Minneapolis General Hospital patient, who did not want to go home and who, though clinically recovered, did not wish to face a disheartening domestic situation (a home with a faithless spouse), illustrates a possible situational factor. Such and similar cases are frequently observed. We must recall that tuberculous infection upsets seriously the life expectations, economic status, and the family life, and can cause unusual personality reactions. The direct effect of the toxin is that of a reducing agent; it predisposes to unstable character manifestations.

I might here relate the case of a young married man, O. L., who suffered from sacroiliac disease. He was reared on a farm. At the time of adolescence he showed a tendency to stealing. More delinquent behavior followed and commitment to a reformatory for about a year resulted. During the last couple years (I saw him in 1922) he committed several of the most brutal sadistic murders of women ever recorded in the history of the community. That his perverse instincts

were made more acute by the chronic infection seemed then a strong possibility.

Von Muralt quotes Wiehrauch, who tested suggestibility in sanatorium cases. He performed *injectio vacua* and reduced fever in 19 per cent of the cases. When he did the same injection with the positive suggestion that fever would follow, 39 per cent of the cases developed fever. I have not had the opportunity to attempt to confirm this procedure. The conclusion was drawn that suggestibility is merely heightened in the tuberculous. This fact should explain why the morale in a sanatorium is so easily disturbed by one bad factor. Suggestion, it has been shown, may influence favorably and otherwise, fever, cough, pain, nutrition and even expectoration.

I have never seen a patient suffering from epilepsy in whom I could determine tuberculosis as a causative factor. Autopsies in so-called idiopathic epilepsy cases have been reported, showing isolated calcified tubercle formation in the brain. Tuberculosis does not cause congenital mental deficiency.

Concerning mental disease Knopf says: "The heart and the mind are normal. The finest traits of character are the rule rather than the exception." Kraepelin states: "Tuberculosis has a small rôle in causing mental disease in spite of the toxic, mixed infection, long fevers and spiritual traumata, that are present. Irritability, dejection, apprehension, self-interest, sexual hyperesthesia, and increased zeal may be present. Occasionally, a delirium of the 'infection delirium' type with confusion, sensory delusions, grandiose ideas, etc., is noted." Pottenger observed several cases of insanity in which the tuberculosis seemed to be the definite etiological factor. He does not state the types observed.

In a long article, based on 2,093 autopsies in which incidence of tuberculosis in every form of mental disease is investigated, M. Zalla discusses tuberculosis and psychosis. From his researches, the author expresses the opinion that syndromes of hebephrenia, catatonia and paranoia are forms of reaction of the central nervous system in constitutionally predisposed persons to presumably differing etiological factors, among which tuberculous infection occupies a not unimportant place. He also thinks that tuberculosis may be an important etiological factor in involution and simple mania.

Liebermeister aptly questions our conception of the endogenous factor, the hereditary defect, in the etiology of mental disease. He feels certain that many asthenic-anemic syndromes, infantalisms, and even endocrine disturbances can be ascribed to the infection of tuberculosis. While he shows that no specific mental reaction is due to the infection, yet psychosis is suggested to signify possible biologic healing effort, though many psychotics die of tuberculosis.

Only twenty-five years ago it was customary to refer to tuberculous mania, tuberculous depression, paranoia, etc., as if the mental states were of a separate and distinct class. Case 1 is clearly one of delirium of the infection type. Case 2 is one of chronic mental deterioration coming on in adolescence, merely coincidental to the tuberculous infection, through some of the nervous symptoms are attributable to the toxin. In case 3, association of manic depressive psychosis, with the suggested influence of situational factors, is illustrated. In my experience I have never seen a case of psychosis in a patient infected by tuberculosis that could be attributed directly to the infection, excepting the infection and inanition deliria that occasionally occur.

DO NERVOUS DISEASES INCREASE THE INCIDENCE OF AND INFLUENCE THE COURSE OF TUBERCULOSIS?

We can state that mental cases in institutions die frequently of this chronic infection. Though obviously an inadequate approach, we can get an idea of the incidence tuberculosis by noting causes of institutional deaths. R. H. Hutchings quotes statistics of the St. Lawrence State Hospital autopsies. Of 447 males and 381 females, active tuberculosis was found in 12.7 and 16.2 per cent respectively. I. J. Sands reports that out of 962 autopsies performed from 1911 to 1919 in the Manhattan State Hospital, active tuberculosis was found in 13.6 per cent; of these 62 per cent were diagnosed correctly antemortem. Thirty per cent of dementia precox cases are said by him to be due to tuberculosis. Cotton found tuberculosis the cause of death in 75 per cent of this group compared to 16 per cent in general paralysis cases, the next highest group. In the acute types of the former group of mental disease dying within three to five years, he reported tuberculosis in nearly all the cases. Naturally, this seems high and has not been confirmed by others. Hagan, quoted by Keyes, states the percentage of tuberculosis among men-

tal cases is five times that of the well people. Mott states that a skilled pathologist at Claybury Asylum found tuberculosis in 20.9 per cent of 1,982 autopsies. Shaw found that the chief cause of death in epileptics in England was 25.2 per cent tuberculosis. Some 88.3 per cent of epileptics reacted to tuberculin as against 33.3 per cent of non-epileptics. The death rate among the feeble-minded from this disease equals that of the insane and epileptics. Obviously enough, it is very likely that the death rates do not equal the incidence of the infection.

MENTAL INFLUENCE ON THE COURSE OF TUBERCULOSIS

The effect of psychic influences upon the course of phthysis has already been referred to. In brief an atmosphere of hopefulness, good cheer and freedom from unnecessary irritation, should be instituted. Psychic excitations increase the flow of secretions from the adrenal and thyroid glands particularly, as was shown by Perrin and Puranovitch, who have investigated extensively the subject of disorders in the organo-vegetative nervous system in pulmonary tuberculosis. Depression in the functions of digestion after psychic trauma is well known.

A knowledge of the personality of the patient should be obtained by the physician during his interviews and of course a congenial rapport should be established between the doctor and patient. Chas. L. Minn says that the mental handling of the patient is fully as important as the physical. The patient's hidden griefs, prejudices, feelings and troubles must be brought out and gone over with him.

In the mental hygiene of the tuberculosis sufferer we must reason that physical and mental vitality are reduced; hence, there is a lowering of the patient's morale. His instincts find freer play and so we are not surprised to find that he is unreasonable in his demands, that his likes and dislikes are often quite groundless, that tendencies to whimsical attitudes of mind occur and that he becomes less co-operative than the healthy individual. Irritability, self-centeredness, childishness, anxiety, ungratefulness frequently characterize his makeup. Specifically, we must encourage the patient to allow only the healthier attitudes of mind, to help him in the maintenance of his own morale, to persuade him that yielding to instinctive impulses, as outlined, may lead to aggravation, rather than to the cure, of his disease.

Naturally, if treatment in the home is attempted, the physician's psycho-therapeutic activity must be broadened to include the familial contacts. Keeping in mind the unhappy sequelæ of unhealthy mental attitudes, feelings, shocks, etc., as proven by actual experiment, one should be easily convinced of the importance of the mental aspects of clinical tuberculosis.

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THE USE OF LIPIODOL IN THE DIAGNOSIS OF PULMONARY CONDITIONS

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Under the most ideal conditions the diagnosis of obscure pulmonary lesions has been difficult. The *x*-ray has added much to our knowledge, but even the interpretation of stereoscopic plates has not given us definite ideas on all pulmonary pathology.

Jackson[1] was able to show the bronchial tree with such a substance as bismuth subcarbonate, and Lynah and Stewart[2] used a suspension of bismuth in oil. Neither has been used as routine to any great extent because of the difficulty experienced by the patient. In 1921, Secord and Forestier[3] showed their first results with iodized oil in living subjects. Since that time the specialists in this field in Europe, and recently in North America, have been using it as a routine procedure for additional help in diagnosis of obscure chest conditions. Archibald and Ballon[4] at McGill, Grady[5] and Prichard[6] have been the earlier workers on this continent. It is impossible to review all of the work.

Iodized oil, or lipiodol, as it is better known, is a clear, amber yellow fluid. Chemically it is 40 per cent iodine held in poppy oil. It has the specific gravity of 1.350, is neutral, and is insoluble in water and alcohol. The iodine is held so closely that it cannot be detected as free iodine by any chemical tests. The opaque and antiseptic qualities make it very effective for examining various cavities by *x*-ray. The liberation of free iodine when exposed to the air, light, humidity, and high temperature gives it a dark brown color, and when this occurs it should not be used. As it is opaque and non-irritating to the mucous membrane, it can be used without discomfort in mapping various cavities in the body. It has been used to examine special cavities, as subarachnoid and epidermal spaces, spinal cord conditions as compression and tumor masses, and the uterus and fallopian tubes by the gynecologist without danger. Any blind cavities, as fistulæ, etc., are easily followed with lipidol. The greatest use seems to be in chest conditions where the bronchial tree can be studied. It is surprising to note the additional information gained after comparison even with stereoscopic plates. The lack of improvement in many chest conditions can be understood after comparing the two pictures.

The iodide is liberated slowly in the various cavities mentioned. It is stated by Forestier that as a rule the greater proportion of the iodine is excreted in the urine by the third day. However, it is still present even in normal subjects after one or two months in various amounts. We have found it at the end of 21, 28, and 32 days in a few patients, although others seem to absorb it more readily. The normal subjects seem to absorb the oil sooner than pathological cases, although this has not always been the rule. For this reason it has become our practice to examine all cases before a second injection has been made. This is not done because of any great danger, but there might be a difference in interpretation of the area to be examined if it did not fill properly.

It has been found that the iodine is liberated by the alkaline carbonates of the saliva and intestinal secretions. The gastric secretions have no effect on the oil, and therefore if any appreciable quantity has reached the stomach, it should be recovered by lavage before acute iodism occurs. In one case, in a child, when we feared that this might occur, vomiting was induced. So far we have not had any acute symptoms appear. Fluoroscopic examination will control this danger so easily that it has been routine to glance at the stomach in all cases after injection. The patient should also be warned to expectorate all secretions for a few days, and to refrain from swallowing any oil left in the throat after injection. Idiosyncrasies to iodine are said not to be a contraindication unless they are very pronounced.

TECHNIC OF INJECTION

There are four methods available for injection of lipiodol. The laryngoscopic and bronchoscopic methods demand a special apparatus, and a person trained in the use of it. It is comparatively easy in the hands of one who is familiar with the necessary technic, but for the internist it is not always possible to have either the instrument or the training. I appreciate, however, that there may be certain cases that are better adapted to these methods, and I think that with children especially this is the technic of choice. In the cases of the two children I have done, it

was very tiresome work to get coöperation, although I realize that I was very fortunate in having patients who were not nervous and who quickly lost their fright of me and the instruments. In these cases it seems that Jackson's laryngoscope is the best apparatus to use.

The third method is the cricothyroid method, and seems to be the least desirable of all, especially in adults. Here the oil is injected into the trachea between the cricoid and thyroid cartilages with a straight or curved needle. Local anesthesia is first necessary. There is a possibility of two dangers in this method. Forestier has suggested the possibility of infection in the surrounding tissues following the withdrawal of the needle from the trachea; and secondly, local subcutaneous emphysema has occurred when the oil was injected into the surrounding tissue. I must admit that I know nothing about this method.

The last, or supraglottic method, seems to be the best suited to the internist. In this technic, a local anesthetic of 10 per cent cocaine is used. In some very nervous individuals a hypodermic of one sixth grain of morphine and a hundredth of atropine before beginning the anesthesia will give a better result. In some cases, especially with those who have had treatments of the larynx, an anesthetic may not be necessary. Swab the throat, base of tongue, soft palate, and pharynx two or three times with the cocaine solution. After a few minutes, spray the lower portion of the pharynx, using a spray with a curved nozzle in order to reach the glottis and larynx if possible. After a few minutes, repeat the procedure, telling the patient to hold the tongue forward with a piece of gauze, in order to keep the tongue from slipping back into the throat. Instruct the patient early in the technic to be used, and allow him to become familiar with the various steps. It is surprising to see how well the larynx can be anesthetized in this way. Continue until the patient states that he feels a lump in his throat. Much emphasis must be laid on anesthetizing the soft palate and the back of the pharynx as well as the larynx, since it is necessary to remove both the gag and the cough reflexes. After five or ten minutes, with the tongue held in place, the mirror and curved cannula can be inserted into the back of the throat, and the oil watched as it enters the larynx.

The transglottic method is a modification of the supraglottic technic. Here the cannula is inserted through the glottis into the trachea. This requires more extensive anesthesia, giving 1 to 3 c.c. of warm cocaine directly into the larynx with a catheter or curved cannula.

As a rule, 20 c.c. of the warmed oil is injected, but 40 to 50 c.c. may be necessary to fill the area to be studied, especially if large cavities are present. Apparently there is little danger in this amount, but it is apt to obscure the field with superimposed shadows if only a small area is to be examined.

During the injection with oil the patient should be directed to breathe naturally. If he desires to cough, usually a deep inhalation will control it. Any attempt to swallow during this time loses the field on the mirror, and generally means that the operator has not directed the cannula properly, the oil not entering the larynx. Physical examination of the chest after injection will demonstrate râles until the oil is entirely absorbed.

POSITION OF THE PATIENT

In planning the injection, the position of the patient must be considered. The oil follows the bronchial tree generally through gravitation. The explosive action of coughing, however, at times forces the oil in various other areas. If the lower lobes are to be examined, the patient sits directly in front of the operator, inclining to the side to be injected. In the upright position, of course, most of the material will follow the right bronchus, but some will always be found in the left side as well. However, if both areas are not to be studied, incline the patient to the side to be filled. When the middle portions of the lungs are to be injected, the patient should be half reclining, and in case the apices are to be filled, the patient should lie nearly flat and be turned to the side in question. In the latter case it is better to have a tilting table to be used immediately after injection, or at least to allow the head and corresponding arm to hang over the end of the couch in order to get the best possible results. In this case one can visualize only one side at a time.

PRECAUTIONS AND CONTRADICTIONS

There are a few precautions to observe whichever method is used. The patient should always be watched for a few days, having a complete

physical examination before injection. The injection should not be done if a high fever is present. Examination of the sputum, general laboratory work, and x-ray plates should always be completed first in order to arrive at a diagnosis and determine the extent of chest involvement. Severe bronchial irritation with considerable cough should be watched with a great deal of care. A few cases of edema of the upper respiratory passages have been reported, but none have been fatal. Any ulceration or severe infection of the larynx should be a contraindication until the general and local condition of the patient is known. An injection should not be attempted for a prolonged period following hemorrhage of any great amount. Active tuberculosis with a high fever is a definite contraindication, as well as any acute lung consolidation with a large amount of expectoration. Naturally, any extensive septic condition should not be studied at that time.

RADIOGRAPHIC TECHNIC

The x-ray plates should be taken as soon after injection as possible. This is necessary in order to get a picture of the true condition before the explosive action of coughing has forced the oil into the terminal alveoli, when the superimposed shadows may obscure the bronchial tree. It seems best, especially if the upper lobes are to be examined, to have the injection made on the radiological table. If the patient is allowed to sit up or stand, the areas may drain before the exposure is made. In all cases, an anteroposterior and oblique plate should be made, and in special cases, a lateral plate may give additional information. At times a horizontal plate will be of great help in studying the chest. The plates need more contrast than ordinary films, and as a rule the Bucky-Potter diaphragm is an aid in getting good results.

RESULTS IN NORMAL SUBJECTS

It must not be forgotten what the oil is intended to demonstrate and what is to be accomplished by the injection. The bronchial tree and any draining cavities are the areas to be filled. By the injection, areas in the parenchyma outside the tree can be better studied, but these areas cannot be visualized by the opaque media. Any obstruction along the course of the tree can be localized, and the position of the trachea, bronchi and other structures can be demonstrated.

In normal subjects, the trachea, bronchi and lower branches of the bronchioles are definitely seen. The relation of the trachea to the aorta and esophagus is usually shown. The upper and larger passages are only outlined by the oil, but the smaller branches are usually filled, unless not enough material has been used at the time of injection. Bronchial secretions, if greatly increased, may obstruct the flow of oil into the smaller passages. At times the acini are defined, but as a rule the superimposed shadows do not allow study of these very small compartments when they are normal in size.

PATHOLOGICAL CONDITIONS

Any obstruction along the course of the trachea from compression in or outside of the upper respiratory tract is easily demonstrated, especially when lateral and oblique plates have been made. This allows study of the mediastinum and demonstrates any pressure masses that may be present.

The use of lipiodol plates instead of ordinary x-ray films in the localization of opaque foreign bodies is not necessary unless the body has been imbedded in the lung for a long time. Here it will help to decide whether it is in the bronchi or lung tissue, and whether a lung abscess has developed. With transparent foreign bodies the injection should give a great deal of information. It can be used for localization, and also will help in studying the surrounding tissue. Care must be taken not to inject too much oil, so as to mask the surrounding field.

The greatest help is found in the visualization of bronchial dilatations, especially when they are too early to be demonstrated by ordinary radiographic plates. This is especially true in hilus lesions and in left-sided dilatations when the area to be studied is behind the heart. The areas usually appear like small clusters of grapes, but may be cylindrical, fingerlike, or branching, depending upon the amount of involvement. If there are abnormal bronchial secretions present at the time, the tree may not be filled, and for that reason all suspected cases of bronchiectasis should receive postural drainage before injection. As stated above, this must not be confused with the condition normally present after coughing, and when not enough of the oil has been injected.

As we follow the tree into the lung tissue, the most important fact to be determined is draining

lung cavities and abscesses. This is where the chest surgeon finds such great help in both diagnosis and prognosis. The position of the open cavities in the lung parenchyma and its close relationship for drainage through the pleura can be ascertained. Abscesses not draining into the bronchial tree may show very little, but study of the parenchyma will still reveal a great deal of information. Tumor masses, such as primary or metastatic growths in parenchymal tissue, can be demonstrated at times by pressure exerted over apparent non-filling areas. Deviation of the trachea and bronchi by mediastinal pressure can be observed. Fistulæ and their communication with the bronchi and pleura are best studied in this way. There is a possibility that emphysema, if extensive, may be plated at times.

The relationship of the lung tissue to the pleura can also be determined. Thickened pleura and dense adhesions from previous disease, with deviation of the trachea and bronchi, may not allow proper study of the lung parenchyma. The relationship of old cavities, when the lung has been contracted by scar tissue and possibly by calcified and thickened pleura, is revealed by injection. Many times persistent and prolonged bronchial secretions may have made us suspicious of bronchiectasis, but the diagnosis now can be definitely determined. This is especially true of non-active tuberculosis and cavity formation in the upper lobe with associated bronchiectasis below.

The frequent task of differentiating between localized pneumothorax and possible lung cavities can be more easily accomplished. The uncertainty of the so-called annular shadow should now be removed.

As mentioned above, the chest surgeon should find a great deal of help in deciding the operative procedure to be followed. The question of partial or complete thoracoplasties can be decided. The result obtained can be definitely determined. It is interesting to see how few of the cavities are entirely collapsed by even this new method of treatment if followed by injection. The results of therapeutic collapse of the lung for tuberculous cavities and extensive bronchiectasis can be watched.

It has been stated by some observers that lipiodol seems to have some therapeutic qualities. There seems to be some antiseptic property to low grade bacterial lung infections. A great deal of improvement has been noted in patients with bronchiectasis, and patients have reported the loss of the foul odor and decreases in the amount of sputum. Healing of chronic fistulæ has been noted by some observers. It seems of little value in the treatment of tuberculous cavities. Lung abscesses have at times healed more rapidly after injection. The permanent results in bronchiectasis cannot be determined at this early date, but the psychological effects with the decrease of cough and foul sputum must be a haven of rest for these unfortunate individuals. The treatment of asthma and chronic bronchitis has been tried with varying improvement. At the present time, we have two patients with asthma under this routine. Both were cases of very long standing in which all allergy tests proved negative, and in which all possible foci were investigated. It is too early to make a definite statement as to cure, since psychology may enter into the patient's apparent improvement, just as other methods have done in the past.

In therapeutic treatment, smaller amounts of oil should be used than in diagnostic work. As a rule, 5 to 10 c.c., injected frequently, depending upon the rate of absorption, gives the best results. Different areas of the lung should be injected each time.

CONCLUSIONS

1. Injection of iodized oil into the bronchial tree can be done by various methods, none of which cause any irritation and damage to the mucous membrane.
2. The supraglottic method has proved capable of showing any areas demanding study in this small series. No bad effects have been noted, and acute iodism has not occurred.
3. The entire bronchial tree can be followed by repeated injection, and all normal and abnormal pathological cavities draining into the system can be filled.
4. The great advantage of this method of study over ordinary *x*-ray films is demonstrated in visualizing areas around the hilus, behind the heart, and beneath diseased pleura.
5. The results in collapse of the lung by thoracoplasty and therapeutic pneumothorax can be determined.
6. Annular shadows can be differentiated.
7. The therapeutic action of iodized oil in

some chronic pulmonary diseases offers a new hope for improvement in these patients.

8. This new medium may open the entire field of therapeutics in pulmonary lesions and prove the vehicle for rapid advance in the near future.

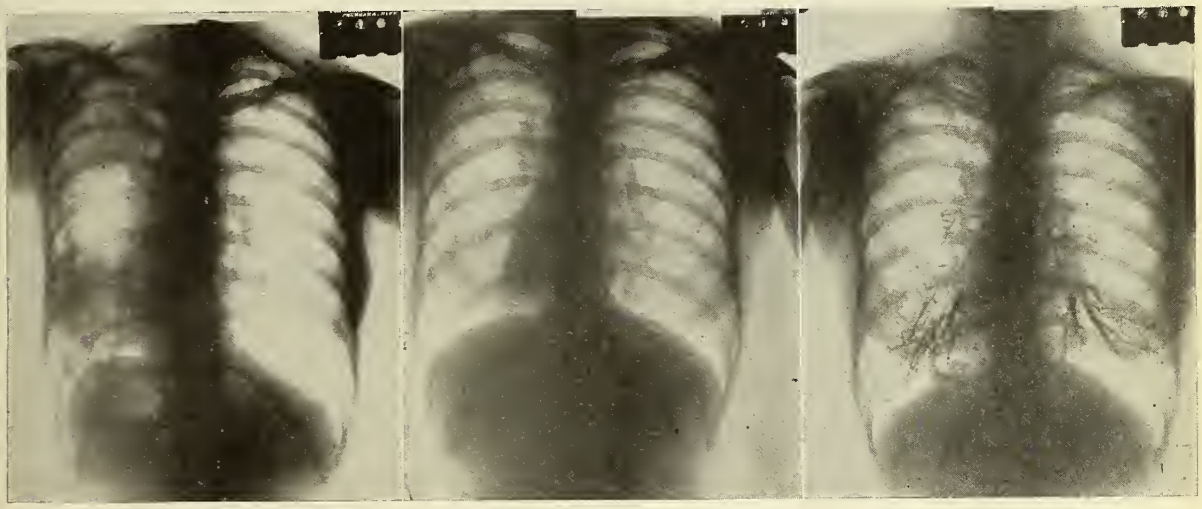

Fig. 1a Fig. 1b Fig. 1c

Fig. 1a shows the involvement of the lung upon entrance to the hospital, May 28, 1926.
Fig. 1b shows the improvement on June 26, 1926.
Fig. 1c shows the outline of the bronchial tree in both lower lobes.
Note the infiltration of the terminal alveoli due to coughing soon after injection. The case is presented to demonstrate the normal structure of the bronchial tree. The asthmatic attacks have disappeared since injection, which is offered here as a therapeutic procedure.

CASE REPORTS

The cases and material presented here were obtained through the courtesy and co-operation of Dr. F. F. Callahan, Pokegama Sanatorium, Pokegama, Minn.

Case 1.—R. C., female, aged 33, was admitted to the sanatorium May 27, 1926. Family history negative. Past history, measles, whooping cough, scarlet fever and diphtheria in childhood. Small-pox at 19 years. Tonsillectomy under local in 1920. Had an attack of bronchitis in September, 1920, which lasted several weeks. She left her home in South Dakota to spend a month in Montana, and the bronchitis seemed to be improved. On returning home, she began to have severe asthmatic attacks which continued for thirteen months, since which time they have been intermittent. She had an attack of influenza in March 1926, which kept her in bed three weeks. She worked one month after having influenza and stopped on account of pain in the left chest, both shoulders, and some cough and expectoration. Her doctor found a lesion in the left lung and two tubercle bacilli in her sputum. A few days before coming to the sanatorium, both feet and legs became swollen and painful, and there was a skin eruption in the same area.

An examination made on May 27, 1926, showed evidence of a slight fibroid infiltration in the apex of the right lung, with extensive involvement from the apex to the second rib and between the fourth and fifth ribs on the left side. The heart was normal, both feet and legs up to the knees were swollen and tender, and the skin showed a rather marked petechial eruption. The evening temperature (rectal) ranged from 100 to 100.4 for about ten days and then became normal. One typical tubercle bacillus was found in the sputum on June 12. The urine was normal. Several blood examinations showed an average red cell count of 4,000,000, leucocytes 15,000, hemoglobin (Sahli) 75 per cent. Differential counts always showed a few polynuclears and eosinophiles from 41 to 60 per cent. Examination of a section of muscle revealed no trichinæ. For the first few weeks in the sanatorium she had no asthmatic attacks, the petechia and swelling of the lower extremities disappeared, and she felt greatly improved. After one month in bed, the greater part of the lesion in the left lung had cleared up. All allergy tests were negative. The improvement continued until about August 1, when she began to have frequent and severe attacks of asthma. On September 12, she received an intratracheal injection of lipiodol which caused no general reaction. Following the lipiodol she has had but one attack of asthma, a very mild one on the morning of September 13. Films made of sinuses one week later showed a probable infection of the left antrum.

Case 2.—L. G., a student, female, single, aged 19, was admitted to the sanatorium on Aug. 3, 1926. Family history negative. Past history: Pneumonia at four years, and has coughed ever since. Measles at nine years. Examined five years ago, and told that she had bronchiectasis. A tonsillectomy under ether caused no change in her cough and expectoration. She lost

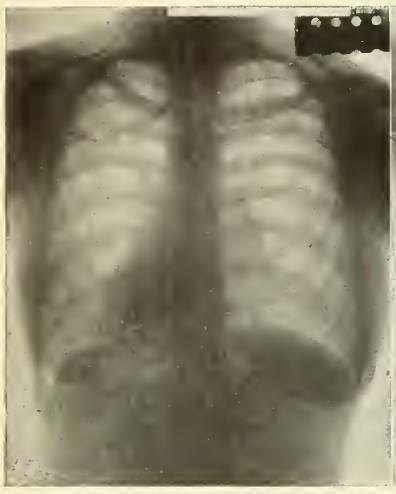

Fig. 2a

Fig. 2b

Fig. 2c

Fig. 2a shows the lung the day of the injection. Note the bilateral infiltration in the lower lobes and the large cavity in the left apex.

Fig. 2b shows the injection of the lower left lobe with slight filling in the left upper and right lower lobes. Note the generalized dilatation of the bronchial tree in the left lower lobe.

Fig. 2c demonstrates the necessity of oblique plates. Note the increased dilatation in this direction over the antero-posterior position.

Fig. 3a

Fig. 3b

Fig. 3a shows the lung before injection. Note the retraction of the heart to the right side.

Fig. 3b outlines the cavity behind the scar tissue and heart. Note the marked deviation of the trachea to the same side. Oblique views do not show any lesion not noted in the antero-posterior view.

weight in the spring of 1926, and her doctor made a diagnosis of pulmonary tuberculosis. The diagnosis was confirmed at the Mayo Clinic.

On admission to the sanatorium she was afebrile, but twelve pounds under her usual weight and was raising copious quantities of viscid sputum in which were found a few tubercle bacilli. The sputum was not foul.

Physical examination: Her left nostril is almost entirely blocked by a crooked nasal septum. The fingers show moderate clubbing. There were râles in both lower lobes, most of which disappeared after expiratory cough. At the left apex there was slight dullness, prolonged on expiration and fine râles after cough. *X*-ray examination showed a cavity in the left upper lobe with bilateral bronchiectasis which was much more marked on the left side. A lipiodol injection of 20 c.c. in the left lower lobe showed a marked fusiform dilatation of the bronchi in this area. A moderate elevation of temperature and slight headache came on about twelve hours after the injection and lasted forty-eight hours. The sputum was somewhat diminished for about two weeks, but is now about the same as it was before she was given lipiodol.

He was admitted to the sanatorium Aug. 3, 1926. Examination showed marked retraction and fibrosis of the right lung with cavity formation. Heart, mediastinum and trachea were pulled to the right. The left lung showed very slight involvement of the upper lobe with marked compensatory emphysema. Sputum was positive. Intra-tracheal injection of lipiodol was given Sept. 12, 1926, to ascertain the size and location of the cavity in the right lung. The temperature, which had been normal, rose to 103 on September 13, and he had a chill; temperature dropped to 100.4 on the 14th, and became normal two days later.

Case 4.—C. P., female, married, age 29. Family history unimportant. Past history: She had pneumonia three times between one and five years of age, whooping cough at six years, typhoid fever at thirteen years (in bed three weeks). The appendix and an ovarian cyst were removed at twenty-two. A miscarriage occurred at twenty-five, and she was sick with influenza two months in the fall of 1918. She has always had a cough, but it has been much worse since a severe attack of bronchitis in March 1926. Since that time she has raised several ounces of foul sputum daily. She has lost 26 pounds, and feels very weak and tired.

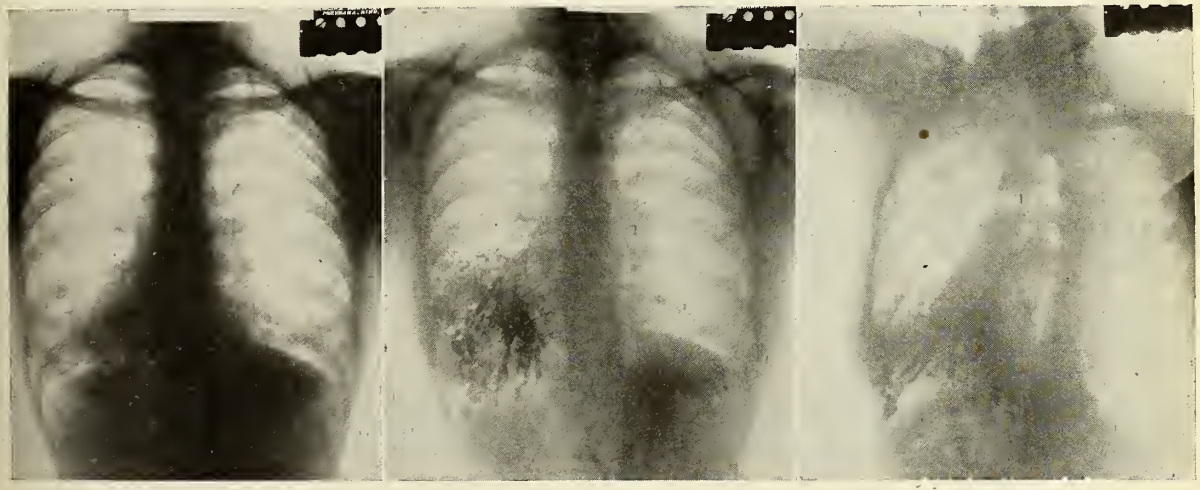

Fig. 4a Fig. 4b Fig. 4c

Fig. 4a shows the marked infiltration of the left lower lobe, also slight involvement of the right lower lobe.
Fig. 4b again demonstrates the diffuse dilatation of the bronchial tree in the left lower lobe in the antero-posterior view.
Fig. 4c, oblique view of the same case.

Case 3.—A. T., is a male, single, aged 38. Family history negative. The patient had a right sided pneumonia in 1910, a fistula in ano in 1916, catarrhal colds in 1918, and influenza the same year, complicated by a bilateral otitis media. This occurred while he was serving in the A. E. F. He was transferred from a hospital in France to Fort Baird for tuberculosis. Discharged from Fort Baird as a total permanent disability in 1920, he improved until 1923, when fever occurred again for a few months. He had pleurisy in December 1925. The right tonsil was removed in May 1926; he coughed very hard for the next few days and has not felt very well since.

An examination made Aug. 17, 1926, showed râles over both lower lobes, with dulness and broncho-vesicular breathing over the left lower side. Stereo films showed a marked bronchiectasis in the left lower lobe and some bronchial changes in the right lower lobe. She was given bed rest and postural drainage for one month. Her tonsils, which were badly diseased, were removed under local anesthesia. She was seen again on September 26, and there was no change in her condition. After draining posturally we injected 20 c.c. of lipiodol into the left lower lobe. There was a slight

headache following the injection, which lasted 48 hours. On October 17, she reported a marked diminution in sputum, with a loss of the foul odor and a gain of eight pounds in weight. She thought the sputum had increased a little during the past few days.

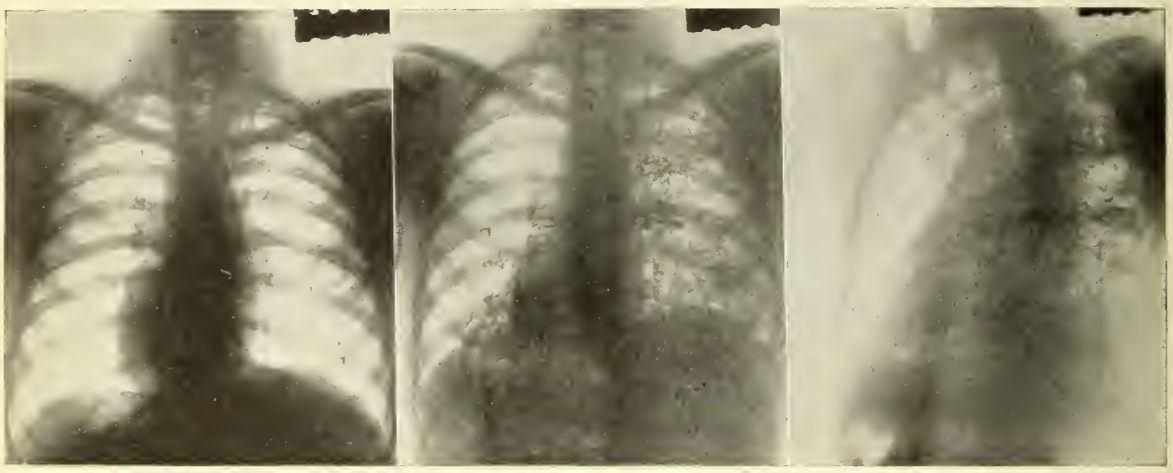

Fig. 5a Fig. 5b Fig. 5c

Fig. 5a shows the lungs before injection. Note the area interpreted as an annular shadow between fourth and fifth ribs, right side.

Fig. 5b, an antero-posterior view of the same case after injection. This demonstrates the ability of injection of the upper lobe by this method. Note the disappearance of the annular shadow. This picture eliminates any possibility of cavity formation in this case.

Fig. 5c, an oblique view, which brings forth the beginning bronchial dilatation in the right hilus, showing up as finger-like processes.

Case 5.—K. P., male, aged 20, single, was admitted to the sanatorium Oct. 27, 1925. Family history negative. Measles and whooping cough in childhood. Tonsillectomy at eight and fourteen years; ether anesthesia both times. Had pneumonia while attending school in Ames, in January 1925, remained in hospital until April 1, 1925, and has not been well since.

Examination showed an infiltration from apex to R2 on the right side, with an area of involvement in the middle of both lungs. His sputum was consistently negative for tubercle bacilli. He occasionally had from 1/2 to 2/5 degree elevation of his evening temperature during the first month at the sanatorium. He was discharged apparently arrested June 9, 1926. He had an attack of influenza in July which caused him to cough and expectorate. The sputum was positive for the first time, and he returned to the sanatorium August 25 for advice. He had lost nine pounds, but had no fever. Examination showed a marked pharyngitis and laryngitis. The sputum contained tubercle bacilli. Under treatment the pharynx improved in a very short time, and his cough and expectoration ceased. X-ray films of his sinuses showed involvement of the left antrum, with a probable fluid level. There was no apparent change in his lung examination. There had always been an area in the right lung which we had interpreted as an annular shadow. Lipiodol was given September 12 to ascertain the real status of this shadow. He had no general reaction following the lipiodol.

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THE CARBOHYDRATE PROBLEM IN INFANT FEEDING*

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The object of this paper is not to offer something new but rather to impress upon those managing infant dietaries the importance of a balanced carbohydrate content, by presenting the actual need, the methods of meeting this need, and the consequences of unbalanced carbohydrate diets.

According to the Talbott Scale, on an average, a baby needs 500 calories of food a day by the end of the first month, and the caloric need increases proportionately with its increase in weight until the child is getting approximately 900 calories at the end of the ninth month. Ninety per cent of the energy intake is available for the purposes of the body while only 10 per cent is lost as excreta. Muscular activity, kicking, crying and restlessness of all sorts may use up as high as 25 per cent of the available energy supplied by the food; basal metabolism requires 40 per cent. This leaves only about 25 per cent of the energy of the ingested food to be utilized for the purpose of growth.

It is an accepted fact that the normal infant thrives on two ounces of cow's milk per pound of body weight per day. Holt and Fales,[1] in their investigations on nursing infants, found that they took daily, on an average, about 12 grams of carbohydrate per kilogram of body weight. Artificially fed infants usually received somewhat more than this. Julius Hess[2] advises one-eighth to one-fifth of an ounce of sugar per pound of body weight per day. This is utilized chiefly to provide heat and energy.

However, we must take into consideration other factors than the mere caloric requirement. Vitamines play a necessary part in the rôle of stimulating normal metabolism and promoting proper growth. But neither the caloric requirements nor necessary vitamines are sufficient. We must also consider the availability and digestibility of different forms of food, in this paper, particularly with regard to carbohydrates.

CARBOHYDRATES USED IN INFANT FEEDING

Needless to say, only those carbohydrates most commonly used in infant feeding can be considered here.

1. *Milk sugar (lactose).*—This sugar would seem the natural one to use as it comprises 7 per cent of human milk. But it is an established fact that its addition to cow's milk to obtain the correct percentage leads to disaster. It has been assigned the leading rôle in initiating all digestive disorders that are fermentative.

2. *Cane sugar (saccharose).*—This sugar is probably most commonly used as a routine for normal infants. Brenneman[3] states that it has been used as a routine with great success in the infant welfare work of Chicago for a number of years and says that Jacobi always advocated it in place of milk sugar.

3. *Dextrine-Maltose preparations.*—The most common of these are: Mead's Dextro-Maltose, Mellins Food, Horlick's Food, Nestle's Food, Karo Corn Syrup, Keller's Malt Soup, Borcherdt's Malt Sugar, etc. During recent years this form of sugar has come into extensive use in infant feeding. Experiments by Flood[4] in plotting the blood sugar curves of newborns after the ingestion of various sugars brought out the following facts:

1. Sugars have different rates of absorption.
2. Dextrose is the most readily absorbed of the monosaccharides, galactose next, and then levulose.
3. The disaccharides showed some of the characteristics of their component monosaccharides.

Thus we see that the absorption of any polysaccharide depends upon two factors: first, speed and ease with which it is hydrolysed into its component monosaccharides, and, secondly, upon the specific absorption rate of these monosaccharides. Flood further concludes that those sugars, namely, dextrose, maltose, and Karo corn syrup, which when completely hydrolysed give only dextrose, clinically are noted for their ease of absorption and non-laxative action. They are ideal foods for bottle fed babies under six months. Lactose and cane sugar, which are slowly or not entirely absorbed in the newborn, have a laxative action but are more readily utilized with advancing age. This explains the clinical experience that dextrin-maltose preparations are more acceptable to atrophic or weak babies with digestive disturbances, and to all cases in which there is a tendency to fermentation.

*Read before the Stearns-Benton County Medical Society, Clearwater, Minnesota, Sept. 23, 1926.

4. *Starch.*—This is used in infant feeding to meet several needs. It has been found to be well tolerated in the form of cereal water in early infancy and a child of three months can successfully digest it as a cooked cereal. Starches cause a finer curd formation in the stomach and materially add to the value of the food.

UNBALANCED CARBOHYDRATE DIETS

1. *Insufficient carbohydrates.*—Babies fed insufficient carbohydrates show the following: (1) Retardation of development; (2) stationary or loss of weight; (3) loss of body turgor; (4) constipation; (5) soap stools; (6) loss of body alkalis; (7) low body temperature; (8) acidosis; (9) anemia and malnutrition in older children.

2. *Excessive carbohydrates.*—When the concentration of sugar solution is too great the result is an irritation of the gastric mucosa. Certain saccharolytic bacteria that feed on carbohydrates, namely, *bacilli bifidus* and *acidophilus*, form split products—acetic, butyric, lactic, formic and carbonic acids. These cause a dilatation of the stomach and produce a pyloric reflex resulting in distress, and vomiting of small amounts of sour smelling, watery, curdled fluid which is acid in reaction.

Two factors cause sugar fermentation—unabsorbed sugar in the intestine and bacteria. Normally the small intestine is comparatively sterile, while the large intestine is crowded with bacteria. Therefore when the sugar concentration is too great a considerable amount of undigested sugar finds its way lower than is normal in the digestive tract, and bacteria attack it, causing sugar fermentation. This results in colic, frequent watery acid stools containing mucus, and excoriation of the buttocks.

A highly concentrated sugar solution, if digested and absorbed, causes water retention in the body and a rapid increase in weight is noticed. However, the flesh is fat and flabby, the child has a reduced immunity to diseases, and is very prone to develop rickets. Holt[5] says, "The easy digestion of foods, consisting chiefly of soluble carbohydrates such as sweetened condensed milk and the proprietary infant foods and the rapidity with which children so fed gain in weight, lead to a great misapprehension, in regard to their value as foods." These sweetened condensed milk mixtures are also harmful to the teeth. Durand,[6] in a report of findings in an examination of 2,000 children from two to seven years of age, found that the incidence of tooth caries in breast-fed and those fed on cow's milk mixtures was 42.7 per cent, and in those having a diet of sweetened condensed milk the percentage was 72.1. Thus to obtain healthy growth a proper carbohydrate balance is essential.

3. *Tolerance for carbohydrates.*—In general, infants have a high carbohydrate tolerance, especially the normally constipated baby; but some do not handle sugar well. Among these latter, gastro-intestinal disturbances, eczema, etc., are common. Other conditions predisposing to carbohydrate intolerance are parenteral infections, such as rhinitis, pharyngitis, tonsillitis, bronchitis, pneumonia, otitis media and pyelitis. Infants suffering from these infections are likely to develop a diarrhea due to the lowered functional capacity of the gastro-intestinal tract. The probable reasons for this are: (1) In these conditions the digestive juices are reduced in amount so that the sugar is not digested or absorbed as well as normally, and hence is fermented; (2) a lowered bactericidal action of the intestinal mucosa is probably present. Overheating the body is also a cause of sugar fermentation, as evidenced by the large number of summer diarrheas. The explanation of this is similar to "parenteral infections" diarrhea. Sugar fermentation may also be brought about by nervous exhaustion and excitement, probably in a way similar to that in which it is brought about in the former two conditions. There is also reduced tolerance for carbohydrates in prematures and congenitally inferior infants, due to the insufficient production of the digestive juices.

As brought out in the first part of this paper, the dextrin-maltose preparations are the most easily digested and absorbed; thus infants with a lowered carbohydrate tolerance will do well upon gradual additions of this type of carbohydrate. In this connection Brenneman[7] states that "whenever there is a tendency to diarrhea, the dextrin-maltose preparations and especially those relatively high in dextrins and low in maltose are tolerated in larger amounts than are cane sugar and milk sugar." Starch in normal conditions in therapeutic amounts is constipating as compared with sugars. In diarrhea, it requires the same vigilance in larger amounts as do the sugars, although in older infants, after the sixth month, it is commonly much better tolerated than the sugars. In smaller amounts, starch is apparently

always tolerated, as is evident from its wide use as barley water and rice water, as the sole food in diarrheas, where a therapeutic starvation is indicated. Julius Hess[8] holds this same view.

CONCLUSIONS

1. Cane sugar is probably the most commonly and most successfully used carbohydrate in the artificial feeding of infants.
2. The dextrin-maltose preparations have recently been shown to be the carbohydrate of choice for infants with a lowered carbohydate tolerance.
3. The early addition of starch, in the form of cereal waters, gruels and cooked cereals is advisable.

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CASS TREATMENT FOR RHEUMATISM

One hundred and thirty-seven West Sixty-Second Street, Chicago, houses a choice line of quackery. Under the names "Western Medical Association" and "Vernon Laboratories" a fake "epilepsy cure" is exploited on the mail order plan. Under the name "Cass Laboratories," nostrums for rheumatism, sciatica, neuralgia, lumbago and gout are sold—also through the United States mails. The A. M. A. Chemical Laboratory reports that the "Cass Treatment" consists of pink tablets, "Special Saline Compound" and gray tablets. The Laboratory found the pink tablets to contain 0.6 Gm. of sodium bicarbonate per tablet. The "Special Saline Compound" was found to be essentially flavored magnesium sulphate. The gray tablets were found to contain essentially 0.16 Gm. acetyl-salicylic acid, 0.13 Gm. cinchophen and 0.3 Gm. charcoal per tablet. From the Laboratory's report it is seen that this wonderful discovery "developed under the direction of the Head Professor of Chemistry at one of the nation's largest Universities," and declared by "two of the foremost Medical Scientists in this country" to be superior to anything else in its line, is merely a combination of acetylsalicylic acid and cinchophen with sodium bicarbonate and magnesium sulphate. (Jour. A. M. A. Jan. 15, 1927, p. 189.)

MINNESOTA AS A HEALTH RESORT*

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The study of climatology and its relations to the rise and fall of civilizations, the fate of nations, and the changes that have taken place in special localities throughout the centuries, is fascinating. The destiny of population in any country is largely determined by its climate. The fertility or barrenness of the land, the distribution and virulence of its parasitic diseases, the occupations and habits of its inhabitants are the direct result of climate. In other words, climate exerts a powerful influence upon man's health and activities, and has been the activating force that has started the great migrations that have distributed man over every habitable portion of the globe.

Turn for a moment to the histories of the countries grouped around the eastern end of the Mediterranean Sea. Mesopotamia, in the fourth millennium before Christ, was the most fertile country of which there are any records. It was the famous country of the Amorites, rulers of Babylonia. Wave after wave of conquering peoples swept over this favored spot. The Semitic invasion was followed by the Scythians, then came the Medes and Persians, each wave falling under the influence of the climatic energy of the region, and prodded on by its stimulation kept in the front ranks of the leading civilization of the world until violently displaced by new invaders. The climate of this region to-day is not one that breeds energy in its inhabitants, but on the contrary is one better fitted to extinguish any sparks of energy that might spring up. The climate through the past ages has undergone a slow but sure change from one best adapted to man's requirements to one of the worst.

Syria has suffered in the same way. Now little better than a desert, its twenty thousand square miles at one time supported a population more dense than any we are acquainted with in the world of to-day, except in and immediately around our largest cities.

Greece and its islands, Egypt and later Rome were not only the victims of this same climatic

*Address of the retiring president of the Minnesota Trudeau Medical Society, September 1926, also made before the Lymanhurst staff meeting, November 1926.

change, but also of the appearance of the malaria mosquito in their marshes and shallow pools, which, undisturbed by frequent storms and rains, became ideal breeding places. Thus the Greeks were dethroned from the position of the most cultured of races, not only by the loss of a stimulating climate but also by the appearance of malaria, a physically and mentally enervating disease, almost equal to the hookworm.

The climate of central Asia has also undergone a complete change in the last three thousand years. Professor Elsworth Huntington of Yale describes thousands of square miles in Chinese Turkestan formerly thickly wooded, where the forests have died from the lack of water, but which still stand, gaunt skeletons of their former glory, preserved from decay by the absolute dryness of the air. He also points out that Syria, which never was covered by forests, is now just as dry, and hence changes in the rainfall of a country cannot be attributed to deforestation but to the hypothesis of pulsatory climate changes due to a shifting of the storm belts on the earth's surface. Changes of such magnitude take place slowly and in huge waves. That they have taken place is taught by the philosophical study of history and by the mute testimony of such witnesses as the ruins of towns in Asia, Africa, and the New World in places absolutely unfit for human habitation at the present time; by old irrigation systems in districts now far too dry to yield water for such uses; old bridges over dry river beds; and on the other hand, by places formerly dry but now wet, as shown by ruins found in swamps in Ireland or in lake bottoms, and by old irrigation works in districts now having a heavy rainfall. The theory of great changes in climate through long spaces of time, is also upheld by the study of the rings of growth in the great trees along our Pacific coast. As some of these trees prove to be more than three thousand years old and a large number over two thousand, they furnish most reliable evidence of the wet and dry periods they have passed through, the dry or wet phase often extending through a century. Such prolonged dry epochs are credited by historians with starting the hordes of barbarians that flowed at different times from Asia across Europe, some even to the walls of Rome.

The destruction of some civilizations has been due to a complete change of climate, the result of the slow and pulsatory shifting of the storm belts and consequently the loss of the energizing element of the climate and the capacity of the country to produce sufficient food. Both the animal and vegetable worlds suffer alike in such disasters. The history of the Maya civilization of Central America, the most advanced civilization of the Western hemisphere, is a good illustration. They had a culture far ahead of that of the Incas of Peru. Their astronomers had developed the most exact calendar known, next to the one in general use to-day. They had a written language. Their architects built temples several stories high and as much as four hundred feet long, decorated with sculpture. Their cities covered square miles of territory. Their energy was prodigious, as these great works were erected with copper as their only metal and without the assistance of any beasts of burden. These wonderful achievements were made in a country which at the present time consists of hot, damp, low lands, infested with malaria, with no agricultural possibilities and no climatic energy to stimulate its inhabitants. These towns were eventually deserted and the inhabitants moved to northern Yucatan, probably on account of a complete change of climate.

The essential elements of climate stated approximately in the order of their importance are temperature, humidity, storms, sunshine, and atmospheric pressure. Our ordinary cyclonic storms are an exceedingly important constituent of climate, bringing variations in all of these elements from day to day. All of these variations are stimulating and are at the bottom the source of the climatic energy which pushes the inhabitants of regions so blessed, to the highest point that their degree of civilization and inheritance is capable of reaching. Human health, energy and efficiency vary with climates and in the same climate with the seasons. Changes are in themselves stimulating; the most depressing element of tropical climates is their uniformity. A long residence in the tropics or the arctic regions, climates so different, has the same deadening effect upon energy and initiative.

Studying the distribution of human energy, efficiency, and health with Professor Huntington, demonstrates that civilization makes most progress where the climate is most propitious; that the leading peoples of to-day are to be found in western Europe from northern Italy to

the southern portions of the Scandinavian peninsula and in North America in a belt extending across the continent from the mouth of the St. Lawrence river to the Carolinas, thence sweeping westward to the Rocky Mountains, including the region of the Great Lakes. In other words, civilization makes its greatest advances in a variable temperate climate, which far surpasses steady and continuous good or bad weather in its effects upon human health and efficiency.

By applying this scheme of climatology to our own district, we see that we reside in one of the world's stormiest regions, in the belt of many cyclonic storms, which are of vastly more importance than the range of temperature from season to season, and which insure that priceless element of variability with its powers of stimulation, upon which the health and efficiency of man, the fruitfulness of the soil, and the advancement of the race so largely depend.

Parasitic diseases were not found in Minnesota by the earliest settlers. The United States Army recognized the natural salubrity of the climate and sent regiments enfeebled by the malaria of the South to recuperate at Fort Snelling. As a local writer expressed it, soldiers were stationed at Fort Snelling to recover from their exposure to the pestilential climate of the South. In 1840 there were forty-five cases of intermittent fever among a thousand soldiers at the Fort. Many settlers came up the river in steamboats and probably brought the anopheles along as fellow travelers. A physician in one of the river towns reported in 1852 that he saw seventy-five cases of ague during the summer in a population of thirty whites and three hundred natives.

Dr. J. I. Head, U. S. A., Fort Ripley, wrote that in no instance had intermittent fever been known to have had its origin in the territory, although the Fort is surrounded by conditions which appear in more southern latitudes to favor the development of malaria.

Later recent immigrants introduced typhoid fever probably contracted on board the trans-Atlantic ships. Some members of the profession contended that these were cases of typhus.

The first recognition of Minnesota as a health resort, was the use of Fort Snelling by the Army as an anti-malarial post. This reputation gradually grew, until, after the Civil War, Minnesota became the most popular health resort in the United States, especially for patients suffering with tuberculosis. Dr. R. I. Trall of New York bears the following testimony to this fact: "The clear, dry, bracing atmosphere and invigorating climate of Minnesota has long enjoyed a world-wide reputation, especially in cases of incipient consumption, and has been extensively resorted to by invalids from the Eastern States and Europe." Many of these visitors from the eastern states settled permanently in the Twin Cities, and not a few of the leaders of to-day are their descendants. Edward Livingston Trudeau was among these health pilgrims, whose name has become a household word throughout the length and breadth of the land, whose monument is the famous Saranac Sanatorium, and in whose honor three state medical societies have taken his name as the sign that they are the tuberculosis societies of their respective states.

At the meeting of the Minnesota State Medical Association in 1871, the report of the committee on climate brought forth a debate participated in by practically all the members on Minnesota as a Health Resort.

The short and condensed report of the committee was as follows: That a sojourn in Minnesota was beneficial to the incipient stages of consumption. That the climate benefited tuberculosis because it favored the processes of nutrition. That the climate was on trial.

The majority of the members in the discussion which followed the presentation of the committee's report, took the position that the health seekers were not given an opportunity to rest, which was the most important element in their recovery, but were rushed here and there, on almost daily excursions, more to their detriment than their improvement. They all appreciated the harmful advice, all too common even fifty years later, to go West, get a horse and a bottle of whisky and try roughing it for a season. They also expressed themselves as being opposed to short visits instead of a stay of a year or more, as the latter was productive of much more lasting results. And lastly they were unanimous that advanced cases should be dissuaded from undertaking such a long difficult journey, which was almost certain to end in disappointment and unnecessary suffering.

Several physicians, who had come to Minnesota because they had had pulmonary tuberculosis, gave short recitals of their personal experience. Dr. Murphy had resided in St. Paul twenty-two years, had gained in weight from 130 to 225 pounds and was strong and vigorous. Dr.

Sheardown after fifteen years residence weighed two hundred pounds and enjoyed excellent health. Dr. Brewer Mattocks, who had published a book on "Minnesota as a Home for Invalids," took a prominent part in this debate, holding that Minnesota's climate was bracing and stimulating. He had observed that the majority of the consumptives stayed too short a time, ran about altogether too much, and that most of them died within two years of the time they returned to their homes.

This statement was true in the case of that remarkable man Henry David Thoreau, who came to Minnesota early in 1861 on account of his health. He spent the short time he was here in excursions and social visits, botanizing and observing the habits of gophers and other small animals. He died within the two year space allotted by Dr. Mattocks. When it was stated before the Minnesota State Medical Association that the climate of Minnesota was on trial, the committee evidently had the idea that the climate would ultimately be shown to be able to heal tuberculous lungs. The discussion revealed that the membership did not have such faith unless the pilgrims were willing to follow certain rules of hygienic living. The great majority of these pilgrims and even some physicians believed in the existence of a curative property in the atmosphere. This idea was encouraged by the propaganda sent out by the territorial and state governments as early as 1850. For instance: "With proper care and no unnecessary exposure, it may be safely said that coughs, colds, and that scourge of the Eastern States, consumption, would be almost entirely unknown. No climate is better adapted for its speedy eradication." Or this: "The whole winter is a radiant and joyous band of sunny days, and star-lit nights. It is the most normal climate on the continent. No other is so exquisitely symmetrical in its entire annual development."

As usual in testimonial literature, preachers are numerous. An Eastern divine writes: "The winter is intensely cold, yet so dry and clear and still that one who is properly dressed finds the climate much more agreeable than the amphibious, half fluid, half solid, grave-like chill of the East." Another contributes this: "It is an everyday experience to meet with residents who came to Minnesota one to ten years ago for their health. Every train brings its quota of invalids. There are witnesses by the hundred to testify to the healing virtues of this climate." Unfortunate multitudes of suffering consumptives flocked to Minnesota with high faith in the healing virtues of its climate. Their faith was not rewarded, and gradually this stream of deluded pilgrims turned their faces to the southwestern states where others like them still wander, ever seeking that promised land whose air carries balm and healing but which does not exist on this side of the great divide. And thus, Minnesota lost her reputation. *Sic gloria mundi.*

Minnesota's climate has changed but little in the past century, except that the atmosphere of our most thickly settled areas is not free of the contamination which industry produces. Minnesota stands in the front rank of Professor Huntington's maps showing the distribution of human health, energy, and efficiency throughout the world. The inhabitants of Minnesota, blessed with a stimulating climate charged with climatic energy like that of the ancient country of the Amorites, have fallen heir to conditions which set no limit to their possible achievements except that of their own capacities.

INFLUENZA DEATH RATE INCREASES DURING 1925

The death rate for the registration area of the United States was 11.8 per 1,000 population during the year 1925. This is almost the same as that of the previous year. The principal decreases in death were from measles, pneumonia and tuberculosis, says the report in *Hygeia*. However, these decreases are not especially significant.

The influenza death rate increased as did that of diseases of the heart and of the kidneys. The number of deaths from diarrhea and intestinal inflammation in babies also rose.

DIAMEL IN DIABETES

Diamel tablets are manufactured by the Maltbie Chemical Co. They are stated to contain "Lithium Carbonate 1½ grs.; Sodium Arsenate 1/20 gr.; Strychnine Arsenate 1/180 gr.; Ext. Jambul Seed ½ gr.; Ext. Gentian, ½ gr." The product is marketed with the claim: "This tablet is employed for the reduction and elimination of sugar in the urine, which it is said to do rapidly. A trial will speedily prove the efficiency of this formula." None of the components of Diamel tablets have any specific effect on the course of diabetes. (Jour. A. M. A. Jan. 22, 1927, p. 267.)

MINNESOTA MEDICINE

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EDITORIAL

An Imperative Need

The vanguard of the encephalitic is forcing its way, with the exception of New York, into all our State Hospitals. An encephalitic psychosis, which is uncommon in the adult and very rare in children, is with reluctance received by our state institutions. The behavior disorders of the encephalitic child and adolescent is the difficult problem. What proportion these behavioristic changes bear to the total number of encephalitics is unknown; they are certainly much greater than we have supposed; in the adult their occurrence is rare. Wimmer states that some of these encephalitic cases "are too sane for an insane hospital, but not sane enough for home care; in the ordinary hospital they have no place." Auden believes that under proper medical, educational and environmental care many of these patients would gain self-control, moral balance, and would be able to take their place in life. "Encephalitis," says Economo, "gives us an entirely unexpected insight into psychological and physiological mental mysteries of mechanism." An intensive study of personality undergoing a gradual disintegration would throw much light not only on encephalitis, but also on the behavior disorders observed in cerebral trauma, chorea and lues which resemble the milder phases of those observed in the former disease.

In London the Metropolitan Asylum's Board a year ago established an encephalitic experimental unit for children from three to sixteen years of age. One hundred thirty-three patients were admitted; the curative results have been far from satisfactory. The Superintendent, Dr. Borthwick, advises a period of residence at a hospital school, with the ultimate hope of achieving ordinary citizenship from those suffering from behavioristic disorders. Two notable experiments are being conducted in this country for the encephalitic child and youth. In 1924 Drs. Bond and Partridge[1] began their investigations with a class of ten boys between eight and twelve years of age. The boys were badly behaved, but intelligent. Aside from strabismus there was no evidence of any gross brain lesion. They were manageable, made fair progress in education, and their behavior was improved.

The State Hospital Commission of New York about the same time began sending to Dr. Raynor at Kings Park State Hospital, children suffering from the after-effects of encephalitis or of some similar disease. They were of both sexes and of all ages up to seventeen years. Those with the Parkinson Syndrome and those having low intelligence quotients were received. They occupy a separate cottage, and excellent work is being done. This group, however, is not so favorable for experimentation. In the State of Pennsylvania there is to be set apart a special cottage at the Allentown State Hospital—at least the children are to be separated from the adult population. Here the behavior difficulties are to be concentrated (Bond).

The State Board of Control of Minnesota has built at Rochester a cottage for encephalitics which will house some 40 patients, twenty male

[1] Post-encephalitic behavior disorders in boys and their management in a hospital. Earl D. Bond, M.D., and C. E. Partridge, Ph.D., Department for Mental and Nervous Diseases, Pennsylvania Hospital. Am. Jour. Psychiat., July, 1926.

and twenty female. No sub-normal children are received. The sexes occupy separate quarters in the same cottage. Violent and disturbed cases are committed to the State Hospital and are being cared for in the wards with the better class of adult patients. It is the purpose of the Board of Control to have a carefully planned program of education and treatment for these children.[2] The funds necessary for its operation are still to be appropriated by the State Legislature.

"The chief need," says Bond,[3] "is complete segregation not only from adults but from other types of badly behaved children. The bright boy should be absolutely separated from the dull one, and the younger children from the older ones, and the boys from the girls."

While this endeavor on the part of the state authorities in New York, Pennsylvania and Minnesota shows most commendable foresight and promptitude in meeting an imperative need, personally I do not approve this form of procedure. An attack of encephalitis does not change or modify the course of a precox or a manic-depressive attack—it may bring to the surface a unitary psychosis, which, when the encephalitic illness will allow, should be transferred to a state hospital. The encephalitic toxic psychosis should be cared for in the special hospital set apart for them. These behavioristic patients should, I believe, be segregated in a special neuropsychiatric hospital or an experimental encephalitic unit built on the cottage plan. There should be a well equipped laboratory, and no connection with a state hospital or a state reformatory; it should afford every facility for intensive medical study and treatment, and it should be located at a medical center. Neuropsychiatrists and psychologists under these conditions would be given every opportunity to observe the reactions occurring in diseased mental mechanisms. Only teachers and nurses familiar with child psychology should be employed. A pleasant environment, occupational therapy and healthy recreation is imperative. The Scottish Investigation in Mental Inefficients showed that more offenses were committed on Sundays than any other day, and that the two other most unsatisfactory days were half-holidays—Wednesday and Saturday (Potts).

For these wards of the state, custodial care and punitive measures are alike futile. Such a hospital opens a vista of research and splendid endeavor dazzling in its possibilities of accomplishment. Only under such favorable conditions for study and clinical observation is the discovery of the Aradne clue to the behavioristic disorders not only of encephalitis, but those also arising from other causes as well, made possible.

The building of such an hospital appeals equally to the scientist and the humanitarian. Human salvage in the child and adolescent is a matter of supreme importance from both an economic and sociologic standpoint.

C. Eugene Riggs, M.D.

Mental Diseases and Childhood

The leading article in this number of the journal by Dr. George Donohoe offers a great deal of food for thought. Written in a manner that a layman can understand, it deals with problems which all parents have to face.

It seems evident that mental diseases in this country are on the increase in percentage as well as in actual number due to growth of population. That hospitalized mental cases outnumber all other hospitalized cases is a serious state of affairs. And that only a comparatively small percentage of mental patients are curable emphasizes the importance of prevention.

The incidence of certain types of mental disease is said by some to be greater in inferior stock. That is rather putting the cart before the horse. That is one reason why such stock is inferior.

No one is in a better position to observe the results in mental derangement of violation of moral codes than the physician. Syphilis, excessive use of alcohol, addiction to drugs are responsible for a host of mental cases which are preventable. And the subjects themselves are not the only mental sufferers. The effects on innocent members of the family often lead to psychic complexes which in time become true psychoses.

The method of attack in the prevention of organic brain lesions is fairly clear. The primary cause must be prevented and progress can only be expected as syphilis, ateriosclerosis, cancer, encephalitis, etc., are overcome. The prevention

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2Personal communication, Blanche L. LaDu, State Board of Control.

3Personal communication, Earl D. Bond, M.D., Physician in Chief and Administrator, Department for Mental and Nervous Diseases, Pennsylvania Hospital.

of so-called functional brain diseases is more complex and requires considerable analysis. Heredity and environment both play important rôles. The training of the child, particularly the one with a poor heredity, so as to enable him to cope with the complex life of today is emphasized by Dr. Donohoe. It is a difficult task to rear a child nowadays when it is not fashionable to have principles, when orthodox religion is not popular, when respect for law is a joke, so that the youth of college age will have acquired rules for his behavior which will enable him to meet situations without undergoing mental conflicts.

Dr. Donohoe's classification of children into two groups which he calls introverts and extroverts is a new one. It does seem possible to look back and classify certain of our childhood acquaintances as outstanding examples of one or the other group. Doubtless many children are a mixture of the two. The difficulties of adjustment for the introvert at the transition period from childhood to young manhood or young womanhood are tremendous. These are the individuals who become introspective and develop peculiar traits or obsessions. The adaptation of religious precepts to modern day life is not easy at best and these are the individuals who may become over-religious to the point of abnormality.

Children see, hear and discuss certain subjects at a much earlier age than a generation ago. The movie has contributed much in this regard. The growing interest in the psychology and training of children is evidenced by various activities such as the juvenile courts, child guidance clinics, and magazines devoted to the training of children such as the one now in its second year entitled "Children—The Magazine for Parents."

General practitioners as well as psychiatrists frequently have the opportunity to correct environmental conditions which are likely to lead to serious mental disorders. Prevention of this sort is highly important.

The Conference of Secretaries

There is no more important officer of any society than the secretary. The society's achievements depend largely upon the energy and ability of the secretary and this is particularly true of the medical society. The president is elected usually for one year—secretaries go on until they resign. The office of president is bestowed upon a member in recognition of his ability and standing among his fellow members, and is rightly esteemed an honor. The secretary of a county society should be elected for a minimum of three years as pointed out by our president, Dr. W. F. Braasch, at the recent conference of county secretaries held at the St. Francis Hotel, St. Paul, February 8. It takes time to "get on to the ropes" of such an important job.

The conference of county secretaries inaugurated by Dr. E. A. Meyerding, our state secretary, was well attended and these representatives of the component units of the state association had the opportunity of hearing first hand of the various activities of the state organization. The morning was devoted to a discussion of legislative activities, the Basic Science and Medical Practice Bills particularly. The Committee on Public Policy and Legislation, of which our former president, Dr. H. M. Johnson, is chairman, has been very active in the furtherance of much needed legislative measures.

At the afternoon session our president emphasized the importance of the county society as a unit in the state organization, the responsibility resting on the shoulders of the secretaries, and the need for concerted action.

Dr. George Earl, chairman of the Public Health committee, outlined the various methods which the committee proposes to employ in placing medical facts in the hands of the public. It was pointed out that it is highly desirable for each county society to be in touch with local newspapers in order to be of assistance when called upon by the newspaper editors. There are some sixty-odd national organizations which are concerned primarily with phases of public health. Many counties and cities have various organizations of a similar sort whose activities are primarily medical. The importance of medical representation in the management of such organizations is only too evident. The Hennepin County Medical Society has been more alive to the situation than other county societies.

Radio broadcasting of medical subjects was discussed by Dr. E. H. Norris, chairman of the committee on broadcasting. It seems that anonymous broadcasting is frowned upon by the radio managers and the State Medical Association has taken a stand against broadcasting by its members in private practice. This leaves a limited field from which the committee can draw.

Minnesota Medicine became the subject of some discussion. It was felt that the journal had sacrificed convenience in make-up for appearance's sake. The Editing and Publishing Committee has decided to act upon the suggestion and replace the table of contents in its former position on the cover of the magazine, beginning with the present issue.

A sample of a certificate of membership in the State Association which will be sent to each member for framing and office display was exhibited. At the last annual meeting of the Association it was felt that an M.D. certificate of this sort would be worth while.

The whole tone of the conference may be summed up in the idea of the importance of concerted action. With the officers and committees doing their part and the individual members contributing the wherewithal the Association should be able to increase its efficiency and carry out the various purposes for which it was formed.

COMMUNICATIONS

Baltimore, February 3, 1927.

TISSUE DIAGNOSIS IN THE OPERATING ROOM

And Immediate Cover-slip Examinations of all Fluids and Pus

Dear Sir:

I will consider it a courtesy if you will publish this letter in your journal, as I am anxious to come in correspondence with pathologists and surgeons interested in the immediate examination, by frozen section, of tissue in the operating room and the immediate cover-slip studies of smears from all fluids and pus.

Microscopic examination of stained frozen sections has been possible for more than a quarter of a century. The staining of unfixed frozen sections with polychrome methylene blue and other stains is a well-established procedure. In many operating rooms in university and other large and small surgical clinics, provisions for these immediate diagnostic studies have not only been available, but have been in practical use for years. While, unfortunately, on the other side, this diagnostic part of the operating room is conspicuous by its absence in many clinics.

Before 1915 it was rarely necessary for a surgeon well trained in gross pathology to need a frozen section to help him in diagnosis at the operating table. Since 1915, and especially since 1922, the public has become so enlightened that malignant disease formerly easily recognized either clinically or in the gross, now appears in our operating rooms devoid of its easily recognized clinical and gross appearance and can only be properly discovered by an immediate frozen section. The majority of operating rooms are not equipped or prepared for this new diagnostic test.

The first essential part for this diagnosis is the technician—one to cut and stain the frozen section, or to make and stain the smear. The second is a pathologist trained to interpret it. It is possible for the surgeon to be all three in himself, and some young surgeons are so equipped. In others it is a dual combination—surgeon and pathologist in one, and the technician. More frequently it is three—operator, technician and pathologist. It makes little difference whether it is one, two or three individuals, providing each has the equipment and training for this most difficult diagnostic test.

In the address as chairman of the surgical section of the Southern Medical Association, I discussed biopsy, and this paper has been published in the Southern Medical Journal for January 1927 (Vol. XX, page 18). A reprint of this paper will be sent to anyone on request. The chief object of this letter is to come in contact with surgeons and pathologists who are sufficiently interested in this problem to discuss it either by correspondence, or by attending a meeting in the surgical pathological laboratory of the Johns Hopkins Hospital, either the Monday before or the Friday after the meeting of the American Medical Association in Washington.

Schools for technicians may have to be established in different sections of the country, and the surgical pathological laboratories of the medical schools and the larger surgical clinics should offer courses in this tissue diagnosis, so that surgeons may learn to become their own pathologists, or pathologists learn the particular needs of the surgeon in tissue diagnosis in the operating room.

It is quite true that when the majority of the public are fully enlightened, the surgeon will see lesions of the skin and oral cavity and the majority of subcutaneous tumors when they are so small that their complete excision is not only indicated, but possible without any mutilation. The chief danger here will be a surgical mistake—the incomplete removal of an apparently innocent tumor. There is no necessity here for biopsy. If a proper local excision is done, no matter what the microscope reveals, that local operation should be sufficient. But when lesions of the skin, oral cavity and soft parts are extensive and their complete radical removal mutilating, then there must be biopsy to establish the exact pathology.

In tumors of the breast and disease of bone, for years, the diagnosis could be made clinically, or from the gross appearances at exploration. But now, in an increasing number of cases, the breast tumor must be explored, and the gross pathology of this earlier stage is not sufficiently differentiated to allow a positive diagnosis. Immediate frozen sections are essential to indicate when the complete operation should be done. The same is true of the earlier stages of lesions of bone. The *x*-rays no longer make a positive differentiation between many of the benign and malignant diseases, for example, sclerosing osteomyelitis and sclerosing osteosarcoma.

We must not only specialize in tissue diagnosis, but we must organize this department so it will function

properly in as many operating rooms as possible in this country.

Then there is a final and most difficult question to consider. I doubt if it can be settled. What shall be done in those operating rooms in which there is no technician to make the sections and no one trained to interpret the microscopic picture? How can a piece be excised or a tumor removed, for example, from the breast, and this tissue sent to some laboratory for diagnosis without incurring the risk of the delay to the patient. I have discussed this point in my paper on biopsy.

Joseph Colt Bloodgood,
Surgical Pathological Laboratory,
Johns Hopkins Hospital.

OBITUARY

Dr. J. G. Millspaugh

Dr. Joseph Gillispie Millspaugh, a leading physician n Little Falls since 1892, died Jan. 31, 1927, at Monrovia, Calif., where he and Mrs. Millspaugh were spending the winter. He was 76 years old. Death was lue to cerebral hemorrhage.

Dr. Millspaugh was a native of Battle Creek, Mich., where he was born on February 19, 1851, the son of Jacob M. and Mary Ann (Dicker) Millspaugh. He was graduated from the Battle Creek high school and from Hope college at Holland, Mich., in 1874, receiving the degree of Bachelor of Arts. Later he attended he medical department of the University of Michigan at Ann Arbor, and was graduated from that institution in 1876. Subsequently, Dr. Millspaugh took a course in medicine and surgery at Columbia university, New York City, and obtained his degree there in 1877.

After passing his medical examination Dr. Millspaugh began the practice of medicine and surgery at Battle Creek, where he remained for six years. In 1879 he was married to Anna M. Zang of Battle Creek. On account of poor health he abandoned his practice at Battle Creek and moved to Park River, N. D., where he practiced for eight years. While in North Dakota he became prominent in the medical profession. From North Dakota he removed to Superior, Wis., and remained there a year. Climatic conditions being unfavorable in the care of one of his children, he moved o Little Falls in 1892 and began the practice of medicine in Morrison county.

During his practice in North Dakota he served as irst superintendent of the North Dakota board of ealth and also as president of the North Dakota tate Medical Association. He was one of the instiators of the movement to obtain the passage of an ct regulating medical practice in the state of North Dakota. He served as councilor for the Minnesota Iedical Society in the second district and was at one me president of the Upper Mississippi Medical Soiety. He also served as secretary of the local pension oard for about 15 years.

Surviving are his widow and two children, Mrs. . W. Ide of St. Paul and Mark Millspaugh of Arcadia, Calif. Another daughter, Lula B., died early in life.

Dr. Alvah J. Stowe

Dr. Alvah J. Stowe, for thirty years a practicing physician in Minnesota, died Friday, Jan. 15, 1926, at his home in Minneapolis. Dr. Stowe had lived in Minneapolis for eight years, but most of his medical life had been spent in Rush City, Minn.

Born in Waterville, Minn., in 1861, he attended Shattuck school at Faribault, and the College of Medicine and Surgery in New York city, taking his medical degree there. In 1877 he moved to Rush City, Minn., where he took up the practice of medicine after graduation. In 1888 he was married to Miss Mina Riddell.

In 1904 Dr. Stowe moved to Minneapolis, where he lived for eight years. His wife died in 1908, and three years later he married Miss Jane Ogden, returning to Rush City the following year. Last summer he was forced to give up practice because of ill health, and returned to Minneapolis.

Dr. Stowe was a member of Jasper lodge, A. F. & A. M., the Masonic Veterans' Association, the Minnesota Medical Association, and the Shrine.

Dr. Stowe is survived by his wife, two sons, Dr. L. R. Stowe of Minneapolis, and Edward of Duluth; two sisters, Mrs. Elizabeth Chittenden and Mrs. Mary Fish of Waterville, and two brothers, George of Coleraine and Herbert of Waterville.

Dr. Robert L. Wiseman

Dr. Robert L. Wiseman of Pine City, Minn., died Thursday, Jan. 20, 1927, at St. Joseph's hospital in Saint Paul, following an operation.

Dr. Wiseman was a Minnesotan, born and reared. Born at Stockton in 1874, he moved to St. Paul with his parents when he was a few years old. There he lived until he went to Pine City in 1897. He was a graduate of St. Paul Central high school and of the University of Minnesota school of medicine.

Since 1897 he has practised continuously at Pine City. He was married in 1900 to Miss Louise Davis of St. Paul.

Twenty years ago he was resident physician at Pokegama sanatorium, at Pine City. He was a former mayor of Pine City and at one time served as a member of the city council.

As a tribute to Dr. Wiseman, his fellow townspeople are raising funds to establish a memorial to the country doctor who devoted his life to them and their families.

Dr. Ralph E. Morris

Dr. Ralph Edwin Morris, heart specialist, a member of the University of Minnesota faculty since 1913, died Thursday, Jan. 27, 1927, at his home in St. Paul, after a two weeks' illness, of heart disease.

During the war, Dr. Morris served as an instructor of army physicians in cardiosis and aided in the per-

fection of a cardiac machine which automatically traces the heart action.

He was born in Georgetown, Col., in 1879 and was graduated from the University of Colorado Medical College in 1902. He won his Ph.D. at the University of Minnesota in 1913 and immediately became a member of the faculty.

He was a member of the American College of Physicians, American Legion Post. No. 8, and Omega Upsilon Phi medical fraternity.

Dr. Bertolet P. Rosenberry

Stricken while giving testimony on the witness stand in district court, Dr. B. P. Rosenberry, of Winona, died Wednesday, January 19, 1927, at the age of 45. Death was attributed to heart disease.

Dr. Rosenberry was born in Menominee, Mich. He was a graduate of the University of Minnesota, and practiced for eight years in Arcadia, Wis., before coming to Winona. During the World war he was a major in the medical corps of the American Expeditionary forces. His widow and a 13-year-old daughter survive.

OF GENERAL INTEREST

Dr. Josephine Tofte, formerly of Crookston, Minn., is now practicing in Dawson, Minn.

Dr. Egbert Borgeson, formerly of the Mayo Clinic, Rochester, is now located in Saint Paul.

Dr. Henry Roust, who located in Fairmont six months ago, has left, intending to locate elsewhere in the state.

Dr. E. W. Humphrey of Moorhead was recently re-elected president of the Clay County Public Health Association.

Dr. Harold J. Prendergast of Saint Paul has been appointed civil service medical examiner for the city of Saint Paul.

Dr. P. C. Engelhart has moved from his former location at Wood Lake, Minn., and is now practicing in Minneapolis.

The 1927 convention and exposition of the American Hospital Association will be held in Minneapolis. The exact dates have not been announced.

The engagement of Dr. C. W. Mayo, son of Dr. and Mrs. Charles H. Mayo of Rochester, to Miss Alyse Varney Plank of Collingdale, Pa., has been announced.

The Minnesota state hospital for crippled children at Phalen Park, Saint Paul, Minn., recently received a bequest of $5,000 from the estate of Mrs. Alice F. Bigelow of Saint Paul.

Dr. Henri Fredericq, of Liege, Belgium, gave a Mayo Foundation lecture in Rochester on the evening of February 1. His subject was "Humoral transmission of nervous action."

Dr. Walter J. Marcley of Minneapolis has been named head of the tuberculosis department of the new United States Veterans' bureau hospital at Fort Snelling, which will open April 9.

The marriage of Dr. Reuben M. Anderson, Morristown, Minn., to Miss Mildred M. Peterson of Saint Paul, took place in November, 1926. Dr. and Mrs. Anderson are now at home in Morristown.

Dr. Frank E. Burch of Saint Paul has been appointed chief of the Department of Ophthalmology and Otolaryngology at the University of Minnesota medical school, to succeed the late Dr. W. R. Murray.

Dr. J. W. Kernohan has returned to the Mayo Clinic after a vacation spent at his home in northern Ireland. While he was abroad he visited pathologic clinics in Italy, Germany, Switzerland, Holland, and the British Isles.

Dr. Henry C. Cowles, of the University of Chicago, gave a lecture, under the auspices of The Mayo Foundation and the local chapter of Sigma Xi, in Rochester, on the evening of February 3. His subject was "Plant ecology in human affairs."

Dr. Kano Ikeda, formerly of the Minneapolis General Hospital, has been appointed director of laboratories at St. Luke's Hospital in Saint Paul. Dr. Ikeda has been director of the laboratories of the Minneapolis General Hospital for the past seven years.

Announcement has been made of the marriage of Miss Mona Munro of Arlington, Mass., to Dr. Claude J. Ehrenberg, Minneapolis, which took place in Minneapolis, Thursday, February 10, 1927. Dr. and Mrs. Ehrenberg are now at home at 5228 Humboldt Avenue South, Minneapolis.

Erection within a year of a 100 bed convalescent home addition to the Twin City Shriners' Hospital for Crippled Children is being planned. The Twin City Shriners' hospital will be the first of the nine throughout the country to have a convalescent home, although Philadelphia and Saint Louis are making plans for similar buildings.

Dr. George O. Welch, of Fergus Falls, sailed February 7, for Spain, to make a general tour of Europe. Dr. Welch will remain abroad for an indefinite period and will then return to make his home at Fergus Falls, where he has been superintendent of the Fergus Falls State Insane Hospital for the past thirty-four years. Dr. Welch resigned as head of the hospital in January.

Dr. William Engelbach of St. Louis, well known authority on Endocrinology will deliver a lecture Tuesday evening, March 8, at 8 o'clock, in the Palm Room of the Saint Paul Hotel, Saint Paul. The Saint Paul District Dental Society, under whose auspices Dr Engelbach will lecture, has extended a most cordia

invitation to members of the State Medical Association to attend.

JOINT SOCIETY MEETING

During the first two weeks of April, 1927, Dr. Allen K. Krause, Director of Tuberculosis Laboratories and Tuberculosis Dispensary, Johns Hopkins Hospital, Editor of American Review of Tuberculosis, Associate Professor of Medicine, Johns Hopkins Hospital, and active or honorary member of numerous medical, scientific and tuberculosis associations and societies throughout the world, will visit the Twin Cities and other points in the State of Minnesota and the University of Minnesota.

Dr. Krause enjoys a national reputation as an expert in tuberculosis in general and as a leading exponent of the tuberculosis problem in childhood. The reputation of such a man is too well known to need elaboration.

Arrangements are being perfected to hold on the night of Monday, April 4, in Minneapolis, the annual banquet of the Lymanhurst Medical Staff with the regular scientific monthly meeting of the staff in conjunction with the regular monthly meeting of the Hennepin County Medical Society and the quarterly meeting of the Minnesota Trudeau Medical Society, The Minnesota State Public Health Association and the Hennepin County Tuberculosis Association.

Immediately following the banquet the usual business of the Societies holding their regular meeting will be dispensed with and after a few remarks from the President or the Representative of each organization, the principal address of the evening will be delivered by Dr. Krause.

The place and hour of the banquet have not yet been determined. It is expected that this banquet will be the outstanding medical gathering of the year in Minneapolis, and will be well attended by the profession of the Twin Cities and from points throughout the state; the medical society auxiliaries; the numerous public health and social organizations, and is open to the interested laymen.

Gynergen—Ergotamine Tartrate.—The normal tartrate of the principal alkaloid of ergot. Gynergen stimulates the motor nerve endings of the sympathetic division of the autonomic nervous system, thus causing an increase in blood pressure, contraction of the uterus, etc. It is proposed for use when the action of ergot to produce uterine contractions is desired. It is contraindicated when a tonic contraction of the uterus is undesirable. Gynergen is administered intramuscularly or hypodermically, and orally. The product is supplied in the form of Ampules Gynergen, 1.1 c.c., and Tablets Gynergen, 0.001 Gm. H. A. Metz Laboratories, Inc., New York.

Ampoules Glucose (Dextrose-U. S. P.) Lilly 25 Gm., 50 c.c.—Each ampule contains Dextrose-U. S. P., 25 Gm., distilled water to make 50 c.c., accompanied by an ampule containing 2 c.c. of a buffer solution. Eli Lilly & Co., Indianapolis. (Jour. A. M. A. Jan. 8, 1927, p. 101.)

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

THE MINNEAPOLIS SURGICAL SOCIETY

The regular monthly meeting of the Minneapolis Surgical Society will be held Thursday, March 3rd, at 8:00 P. M., in the library of the Hennepin County Medical Society, Donaldson Bldg., Minneapolis. The following program will be presented:

1. Case reports.
2. Surgery in Gastric Ulcer—Dr. Verne Cabot.
3. The Injection Treatment of Varicose Veins by the Use of Sclerosing Solutions—Dr. H. O. McPheeters.

NORTHWEST CONFERENCE ON CHILD HEALTH AND PARENT EDUCATION

A further example of the interest which is being taken in the health and education of the child by the laity and the medical profession in the Northwest Conference on Child Health and Parent Education which is to be held in Minneapolis, March 8, 9, and 10. Physicians as well as parents need to keep up with the work along these lines being done by those who are devoting their activity to the study of child life. The large number of organizations which are sponsoring this particular conference is indicative of its wide scope. Physicians are urged to take advantage of the meetings, the tentative program of which follows:

PROGRAM

General Session, Tuesday Morning, March 8
9:15–12:00

THE DEVELOPMENT OF THE CHILD

Chairman: Mrs. Frank A. Chamberlain, *Minneapolis*
Invocation: The Reverend Dr. John E. Bushnell, *Westminster Presbyterian Church, Minneapolis*

1. The Characteristics of the Healthy Child.
   Henry F. Helmholz, *B.S., M.D., Professor of Pediatrics, Mayo Foundation for Medical Education and Research*
2. The Normal Growth of the Child.
   Richard E. Scammon, Ph.D., *Professor of Anatomy, University of Minnesota*
3. Posture in Relation to Growth and Development.
   Armin Klein, M.D., *Director, Posture Clinics, Massachusetts General Hospital, Boston*

Luncheon Round Table Conferences
12:15–2:00

1. The Development of the Child.
   Chairman: F. W. Schlutz, B.A., M.D., *Chief of the Department of Pediatrics, University of Minnesota.*
   Discussion of Addresses of the Tuesday morning session, by:
   Dr. O. W. Rowe, *Duluth*
   Dr. N. O. Pearce, *University of Minnesota*
   Dr. Frederick C. Rodda, *University of Minnesota*
   Dr. W. Ray Shannon, *University of Minnesota, and others*
2. The Nutrition of the Child.
   Chairman: Edgar J. Huenekens, B.A., M.D.
   Some Problems of Child Nutrition.
   Lydia J. Roberts, *S.M., Assistant Professor of Home Economics, University of Chicago*

Discussion by:
Dr. Woodard L. Colby, *University of Minnesota*
Dr. Albert M. Brandt, *Bismarck, N. D., and others*

General Session, Tuesday Afternoon, March 8
2:30–4:30

Chairman: Mrs. John E. Priedeman, *St. Paul*

1. Work and Efficiency in School Children.
   Max Seham, M.D., *University of Minnesota*
2. The Constitutional Make-Up of the Child.
   George Draper, M.D., *Columbia University*
3. The Health Habits of the Child.
   Arthur B. Chandler, M.D., *Medical Director, Nursery School Laboratory, McGill University, Montreal*

General Session, Tuesday Evening, March 8
8:00

Mr. Willis K. Nash, *President of the Conference, Introducing, as Presiding Officer,* The Honorable Edward F. Waite, *Judge of the District Court, Hennepin County, Minnesota*

Address: The Parent and the School.
Mrs. A. H. Reeve, *President, National Congress of Parent-Teacher Associations*

Address: Community Provision for a Child Health Program.
Grace Abbott, *Chief, Children's Bureau, U. S. Department of Labor, Washington, D. C.*

General Session, Wednesday Morning, March 9
9:15–12:00

THE CHILD AT HOME

Chairman: Mrs. John S. Pillsbury, *Minneapolis*

Invocation: The Right Reverend James P. Cleary, *Church of the Incarnation, Minneapolis*

1. What the Mother May Learn Through Directed Observation of the Child.
   Lovisa C. Wagoner, Ph.D., *Professor of Child Study, Iowa State College*
2. Early Training and the Development of the Individual. John E. Anderson, Ph.D., *Director, Institute of Child Welfare, University of Minnesota*
3. The Young Child and Its Parent.
   Bird T. Baldwin, Ph.D., *Director, Child Welfare Research Station, University of Iowa*

Luncheon Round Table Conferences
12:15–2:00

1. Study Groups.
   Chairman: Mrs. A. A. Mendenhall, *President, Minnesota Congress of Parent-Teacher Associations*
   The Value of Study Groups for Parents.
   Edith D. Dixon, B.S., *Assistant Professor and Extension Specialist, Institute of Child Welfare, University of Minnesota*
   Discussion by:
   Mrs. Abbott Fletcher, *Minneapolis College Women's Club*
   Mrs. Theodore C. Blegen, *Minnesota Congress of Parent-Teacher Associations*
2. Social Hygiene.
   Chairman: Mrs. Robbins Gilman, *Executive Secretary, Women's Co-operative Alliance, Minneapolis*
   Sex Education and the Young Child.
   Mrs. Sidonie M. Gruenberg, *Director of the Child Study Association of America, New York*
   Discussion by:
   Miss Alice P. Leahy, *Minneapolis Child Guidance Clinic, and Others*

General Session, Wednesday Afternoon, March 9
2:30–4:30

Chairman: Mrs. David Percy Jones, *Minneapolis*

1. Problems of Childhood.
2. Discipline in the Home.
   Smiley Blanton, M.D., *Director, Minneapolis Child Guidance Clinic, Professor-Elect of Child Study, Vassar College*
3. The Adolescent Age
   Borden S. Veeder, M.D., *Washington University, St. Louis*

Evening Session, Wednesday, March 9
6:30

Banquet—Curtis Hotel

Mr. Willis K. Nash, *President of the Conference, Introducing as Presiding Officer* Lotus Delta Coffman, Ph.D., LL.D., *President, University of Minnesota*

Introductory Address: The Parent and the University.
Lotus Delta Coffman, *Ph.D., LL.D.*

Address: Parental Responsibility for Child Development.

General Session, Thursday Morning, March 10
9:15–12:00

THE CHILD IN THE COMMUNITY

Chairman: Dr. James T. Christison, *St. Paul*

Invocation: Rabbi Albert G. Minda, *Temple Israel, Minneapolis*

1. The Law and the Child.
   William Hodson, B.A., LL.B., *New York Council of Social Agencies*
2. Social Influences in the Life of the Child.
   Dr. Frederick M. Eliot, *St. Paul*
3. The Community's Needs in the Health Service of the Child.
   Samuel J. Crumbine, M.D., *General Secretary, American Child Health Association, New York*

Luncheon Round Table Conferences
12:15–2:00

1. Education for the Super-Normal.
   Chairman: Mr. W. F. Webster, *Superintendent of Minneapolis Public Schools*
   The Exceptional Child.
   Melvin E. Haggerty, Ph.D., *Dean of the College of Education, University of Minnesota*
   Discussion by:
   L. J. Brueckner, Ph.D., *Associate Professor of Education, University of Minnesota*
2. The Handicapped Child.
   Chairman: M. L. Stiffler, M.D., *Director, St. Paul Child Guidance Clinic*
   Physical Handicaps.
   Borden S. Veeder, M.D., *Washington University, St. Louis*
   Mental Handicaps.
   Mrs. Smiley Blanton, *Minneapolis*

Discussion by:
Miss Mae Bryne, *Minneapolis*
Dr. James T. Christison, *University of Minnesota*
Dr. Roy Andrews, *Mankato*
Dr. Edward D. Anderson, *University of Minnesota*

General Session, Thursday Afternoon, March 10
2:30–4:30

THE CHILD IN SCHOOL

Chairman: Mrs. Ruth Haynes Carpenter, *Minneapolis*

1. Mental Hygiene in Schools and Colleges.
   Arthur H. Ruggles, M.D., *Director of Butler Hospital, Providence, Rhode Island*
2. What the Elementary School Can Do in Character Education.
   Georgina Lommen, M.A., M.L., *Director of Teaching, State Teachers' College, Moorhead, Minnesota*
3. The Relation of the Home to the School in the Care and Training of Children, from the Third Year on Through the 'Teens.
   M. V. O'Shea, Ph.D., *Professor of Education, University of Wisconsin*

ORGANIZATIONS SPONSORING THE CONFERENCE

University of Minnesota
Minnesota State Federation of Women's Clubs
Minnesota League of Women Voters
Minnesota Congress of Parents and Teachers
Minnesota State Public Health Association
Division of Child Hygiene—State Department of Health
Children's Bureau, State Board of Control
Institute of Child Welfare—University of Minnesota
Minnesota State Hospital Association
Minnesota State Registered Nurses' Association
Fifth District Minnesota State Federation of Women's Clubs
Hennepin County Public Health Association
Hennepin County Medical Society
Ramsey County Medical Society
Hennepin County Tuberculosis Commission
Hennepin County Tuberculosis Association
Hennepin County Child Welfare Board
Minneapolis District Dental Society
Third District Minnesota Registered Nurses' Association
Minneapolis Civic and Commerce Association
St. Paul Association
Minneapolis Council of Churches
Minneapolis Council of Social Agencies
Minneapolis Division of Health
Infant Welfare Society
Visiting Nurses' Association
Women's Co-Operative Alliance
Women's Community Council
Council of Jewish Women
Minneapolis League of Catholic Women
Family Welfare Association
Woman's Welfare League
Children's Protective Society
St. Paul Baby Welfare Association
Minneapolis Parents' and Teachers' Association
St. Paul Council of Parents and Teachers
Minneapolis Parochial Parents' and Teachers' Association
Minneapolis Class-Room Teachers' Association
Minneapolis Teachers' League
College Women's Club
Junior League
Minneapolis Child Guidance Clinic
St. Paul Child Guidance Clinic
Minneapolis Rotary Club
Minneapolis Lions Club
Minneapolis Kiwanis Club
Minnesota Association for Crippled Children
Rosedale Cottage Association
Norwegian Lutheran Church of America

TICKETS

Course tickets $3.00, admitting holder to all general sessions of the conference.

Single session tickets, $0.50.

Luncheon tickets, daily Round Tables, $0.75.

Dinner ticket, Wednesday, March 9th, $1.50.

Tickets and reservation may be made by addressing the Secretary of the Conference, 625 Sexton Building, Minneapolis.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of December 8, 1926.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, December 8, 1926, at 8 p. m. Dinner was served at 7 p. m.

The meeting was called to order by the Vice-President, Dr. John E. Hynes. There were 21 members and 1 visitor present.

Dr. John E. Hynes read the report of the Committee appointed to draw up resolutions on the death of Dr. Baldwin, an Honorary Member of the Academy:

"LOUIS BENEDICT BALDWIN, born Oct. 27, 1872, died Oct. 24, 1926. Graduate of the University of Minnesota Medical School 1897. An Honorary Member of the Academy of Medicine since 1911. He served his internship at the City and County Hospital, St. Paul, 1897-98. Practiced medicine in Cando, N. D., for two years and became Assistant Superintendent of the Hospital for the Insane at Jamestown, N. D.

"From this time until his untimely death he was engaged in the problems of hospital administration. In 1910 he was elected Superintendent of the University Hospital and held this position until his death; also serving as Superintendent of the Miller Hospital for two years.

"During the late War Dr. Baldwin was stationed in the Surgeon General's Office, first as Captain and later as Lieutenant Colonel.

"It is particularly to be regretted that Dr. Baldwin had to leave on his pilgrimage in these rather trying hours for the Medical Profession, as he stood always on the side of right and was fearless and outspoken in condemning chicanery and intrigue whether within

or without the medical fraternity. Our profession has much need of such indeed.

"To those who knew him best, his rather brusque manner was nothing but a cloak to hide an inner sensitiveness, and he was essentially social—an apostle of the theory that man is born to live a life in the fellowship of man—and the genuine regret and grief which was manifested when his many friends heard that Mr. Steadfast-for-Truth had been served with a summons was evidence of the respect and high esteem in which he was held.

"No finer example of beautiful, devoted, sustaining helpfulness was ever witnessed than that of his wife during the days of his impaired health."

The Committee:

John E. Hynes, Chairman,
W. A. Jones,
J. T. Christison.

The scientific program of the evening consisted of the following case reports.

Dr. A. R. Colvin (St. Paul) reported a case of large osteoma of the pelvis removed by operation. (Specimen shown.)

The patient from whom this bone tumor was removed was 46 years of age, married, and the mother of twelve children.

The tumor was first noticed fifteen years before its removal; it had caused comparatively little trouble even during pregnancy. Lately, however, because of its prominent position it was subject to trauma and the skin over it became ulcerated, and she begged to have it removed, saying that she had been unable to get any one to consent to operate upon it. I also refused, but on her insistence finally consented.

The tumor, slightly larger than an adult head, had its origin from the crest of the ilium.

Because of the nature of the numerous embryological developments taking place in the pelvic region, tumors of the pelvis are of a very varied character, apart from these congenital anomalies and tumors. Neoplasms of various kinds are of course common, particulary those of mesoblastic origin. The presence of many points of ossification lends an opportunity for wandering cartilaginous elements. Osteomata are quite common. This particular tumor seems to be a pure osteoma, having structure corresponding to spongy bone. Whether it belongs to the type of cartilaginous exostosis, I cannot say, except that it seemed rather to grow into the bone than out from it. The crest of the tumor corresponded to the crest of the ilium. Exostoses cartilaginæ as represented by the lantern slides usually have a pedicle, although they may be sessile, and are usually capped with cartilage and stop growing when ossification of the center—to which they are related—becomes complete. If situated where muscles play over them, they usually have a bursa over their summit. This bursa may undergo all of the changes seen in the bursæ generally. Inflammatory changes usually require the removal of the exostosis with the bursa.

The nature of the base of the exostosis or osteoma is an indication as to the ease or difficulty of removal. In this case the base represented the ilium just above the acetabulum. Because of the overhanging position of the tumor, it could only be approached from behind, and then in the dark. By separating the fibres of the gluteus maximus up to the crest, a chisel could be driven down to the base and then, turning it forward, driven by a sense of touch through to the anterior aspect of the bone, and the tumor could then be broken off. A dissection of the gluteal and abdominal muscles was then made; that is, they were shelled off the tumor externally and internally, and when this was done the peritoneum was exposed to view although not opened. The two sets of muscles, gluteal and abdominal, were then sutured together and the large wound closed, healing taking place without infection.

The patient was able to do her work as a housewife later, and seemed to suffer very little disability because of the loss of her muscular attachments.

Dr. A. E. Benjamin (Minneapolis) reported two cases:

Case 1.—Multilocular Pseudomucinous Cystadenoma of the Ovary and Associated Dermoid Cyst of the Ovary.

M. B., female, married, age 48. Her chief complaints were: enlargement of the abdomen with discomfort and pressure; pain under the left costal margin which radiates to the back only at times; palpitation; frequency and difficulty in holding urine; slightly nervous.

Her menses began at the age of 13, periods regular, duration 3 to 5 days, no dysmenorrhea. She has two children, aged 12 and 13. Normal deliveries, no miscarriages. Her past history is virtually negative. The patient was examined a year ago by another physician and there was no sign of the present trouble. She was again examined in August and September and fairly large cysts, possibly fibroids, were found. The abdomen is tense, fairly symmetrical, enlarged and very prominent. Dullness extends 3.5 inches above the umbilicus and down to the pubes, filling the whole lower abdomen. The uterus is small, about normal in size, freely movable and the mass is separated from it. There is little or no fluctuation of the mass.

X-ray plates show a very large globular mass occupying practically the entire left four-fifths of the abdominal cavity. The mass appears to arise from the pelvis. It is of uniform density throughout, suggesting that it contains fluid material. Colon injection with barium shows definite stasis in the sigmoid, where there appeared to be moderate compression. The transverse colon is pushed upward by the mass, which also overlaps the descending colon anteriorly to it.

Conclusions: Abdominal mass, probably ovarian cyst.

Operative findings: A double cyst on the right side, one containing 1½ gallons of thick gelatinous substance similar to that in dermoid cysts. This cyst was one foot in diameter. The other cyst was about one-fourth as large, adherent to the appendix. There was one cyst on the left containing about 12 ounces of similar fluid and involving two-thirds of the left ovary. This cyst was adherent to the bladder. The appendix was short, club-shaped, and congested. The gallbladder was practically normal. At operation (11-8-26) the

cysts were removed, also the greater part of the ovaries and about three-fourths of the tubes. The appendix was also removed. The patient made a good recovery.

There is a very good description of such cysts in Hertzler's Treatise on Tumors.

Microscopic Appearance: Lined with columnar epithelium, with the nuclei lying near their base. Degeneration and exfoliation found in the cyst contents. The cyst wall showed a layer of loose connective tissue with large vessels, and external to this a layer of dense fibrous tissue with few nuclei. Also a layer of flattened epithelial cells. Papillary projections within the cyst—epithelial prolongations and proliferations of the fibrous tissue of the cyst wall.

Case 2.—A Case of Post-operative Abdominal Adhesions, Cholecystitis, Cholelithiasis, with persistent hiccough.

C. O. O., age 44, male, married 14 years, Swedish, hotel clerk.

Diagnosis: Post-operative abdominal adhesions; cholecystitis, cholelithiasis, persistent hiccough.

Chief complaints: gastric distress, belching, pyrosis, constipation, nervousness, fatigue.

As a child he had had measles. Had been vaccinated.

Operations: Appendectomy in 1906, abdominal adhesions in 1915, repair of post-operative hernia in 1920, complete repair of hernia in 1921, tonsillectomy in 1923, and repair of post-operative abdominal hernia in 1926.

The patient had sinusitis. The heart was somewhat enlarged, and there was palpitation and dyspnea. The patient has some gastric disturbance, gas pains, pyrosis, and eructation; is constipated; and has to be careful of food. The skin is sallow. Blood pressure 110/80. The abdomen shows tenderness over the right costal margin, some rigidity, several scars.

X-ray plates of the chest show the heart and lungs negative. Plates of the gallbladder before and after Cole-Graham dye show one definite round calculus shadow in the region of the gallbladder; definite evidence of pathological gallbladder with at least one stone. Plates of the nasal accessory sinus show a round dim shadow in the lower part of the left maxillary sinus. The remaining sinuses are clear. Conclusions from sinus plates are that there is localized involvement at the lower part of the left maxillary sinus —mucocele. The lower jaw is normal.

Laboratory examination: urine normal; hemoglobin 90; Wassermann negative.

Operative findings: post-operative hernia, intestinal adhesions, loop of small intestine adherent to the abdominal wall, also omental adhesions.

Second operation—Cholecystectomy. Loops of small intestine were kinked and adherent near the upper and central line. The omentum was adherent to the duodenum and to the gallbladder. There were bands of adhesions extending from the gastric hepatic omentum to a loop of small intestine over the stomach. The gallbladder was small, and very adherent to the surrounding structure. A stone ¾ of an inch in diameter was found way down in the end of the cystic duct. A few small stones were in the duct. One stone was ulcerating through the wall of the fundus.

The course after the first operation was negative except for fever due to sinusitis or gallstones and cholecystitis.

Course in the second operation is persistent hiccough. Hiccoughing stops for short intervals under sedatives but returns. There is some vomiting and bloody serum from irritation. Nearly all known remedies have been tried to stop the hiccoughing but with little or no results. Drain (Penrose) still present attached with plain catgut, to the stump not yet absorbed. Temperature 99 to 100. Pulse 80 to 95.

Dr. Wallace Cole (St. Paul) reported cases and showed numerous lantern slides of operations in cases of paralytic feet.

Dr. E. M. Jones (St. Paul) reported cases of phrenicotomy for pulmonary tuberculosis. *X*-ray films were shown.

DISCUSSION

Dr. Jones: Undoubtedly there is a field for this type of work, particularly in cases where there is a lower lobe lesion. It can be done without any particular difficulty.

Dr. Ulrich: I am glad Dr. Jones brought up this question of phrenicotomy. I think it is the right direction we are taking in surgery of the lung. I heard Dr. Yates talk about this some time ago. Tuberculosis of the lower lobe is a very uncommon condition. He mentioned conditions in the lower lobe which may be very well treated along these lines. He also brings out that phrenicotomy does not put at rest the lung tissue. He claims that there is improvement in the circulation and thereby he gets healing. That is his argument for changes in intrathoracic pressure. In the last case Dr. Jones showed, I think the reason there was no displacement of the mediastinum was because it was fixed. If you have a fixed mediastinum, your phrenicotomy will not push the heart over.

We used to think that bilateral paralysis was a lethal condition. That has been shown to be not so by double phrenicotomy. Recently Lemon has produced double phrenicotomy in dogs and he defies any one to pick out phrenicotomized dogs from the non-phrenicotomized dogs by their activities.

Dr. J. T. Christison (St. Paul) reported a case of Actinomycosis of the Lungs and Adrenal.

The patient, A. J., a boy 8 years of age, was admitted to the Miller Hospital on September 20, 1926, complaining of cough, fever and rapid respiration. At the age of three months he had bronchitis; at the age of eight months he had a cough with pneumonia; and at the age of five years he had pneumonia with a cough, and has never been well since. In July 1925 Dr. Geer sent him to the preventorium because of weakness and anemia, but he did not improve there as he should have. On September 17, 1926, an abscess on his back was opened and shortly after that a diagnosis of pneumonia was made and he was sent in to the Miller Hospital. There the physical examination showed rapid and somewhat labored breathing, with diminished expansion on the right side. On the left side there were

coarse breath sounds but no dullness, but on the right side there was dullness below the level of the 6th rib, and bronchophony at the right base. For a time the lung condition seemed to begin to clear up but it again grew worse and he grew gradually weaker until death on November 17, 1926.

The urine was negative; the sputum was large in amount but no tubercle bacilli were seen. The hemoglobin was 45 per cent, the red count 3,100,000, the white count 15,500, and the differential was 66 per cent polymorphonuclears, 32 per cent lymphocytes, and 1 per cent eosinophiles, on October 2, 1926.

The *X*-ray diagnosis on October 4, 1926, was "bronchopneumonia and pleurisy," but on October 25th it was "advanced tuberculosis."

The temperature was very irregular and varied from 99° to 104°. The pulse was also irregular and varied from 120° to 170°.

Pathological Report: The body is that of a poorly-developed and emaciated male child with a length of 124 cm. There is no rigor, lividity, edema, cyanosis, or jaundice. On the back just to the right of the spine and just above the top of the sacrum is a small opening in the skin covered with a brown crust. When the crust is removed no pus is visible and a probe extends only into the subcutaneous tissue with no communication with any cavity or pus pocket.

The anterior abdominal wall is very thin with practically no subcutaneous adipose tissue. The muscles are pale and flabby. In the peritoneal cavity are no fluid or adhesions, but under and behind the liver is a thick layer of yellowish-white fibrin. The appendix is unusually large but hangs free and shows nothing of interest.

Both pleural cavities are entirely obliterated by firm, fibrous adhesions which are broken with difficulty. No fluid is seen.

The pericardial cavity shows only a few drops of clear yellow fluid.

The heart weighs 120 gms. The muscle is pale in color and flabby in consistency. Gross sections show the walls of both ventricles to be thinned and the chambers to be dilated and unusually large. The valves and endocardium are smooth and shining and show nothing of interest. The coronaries are patent and present smooth inner surfaces. The root of the aorta is smooth and shining.

The right lung weighs 315 gms. and the left 400 gms. Both are very large and show over the external surface many small nodules measuring about 3 mm. in diameter. Gross section shows the main substance of the lung to be soft and feathery in consistency and scattered throughout it are small areas which measure 3 to 5 mm. in diameter. Many of these are firm and white, but the greater number are filled with soft, thick, greenish pus and when this is removed there remains a tiny smooth-walled cavity. No definite caseous areas are seen. The lymph nodes along the hilus are enlarged to a moderate degree and dark in color but they show no evidence of either caseation or calcification.

The spleen weighs 100 gms. The capsule is tense and dark red. Gross section shows the pulp to be firm in consistency and dark red in color.

The liver weighs 780 gms. The upper surface is bound to the diaphragm by a thick layer of yellowish-white fibrin which is easily broken with the fingers. This extends over the top of the organ and underneath down toward the adrenal. The gallbladder is much enlarged and a dead white in color. Gross section shows the wall to be greatly thickened, pure white and translucent. From the cut surface clear fluid exudes. The inner surface shows nothing different. The lumen is filled with clear, yellow bile. Gross section of the liver itself shows it is to be pale in color with prominent red mottlings characteristic of a chronic passive congestion.

The gastro-intestinal tract appears to be normal throughout. The pancreas shows nothing of interest.

The left adrenal shows nothing of interest and is normal in shape and size. The right adrenal weighs 50 gms. It is enlarged to a marked degree and fluctuates upon palpation. Gross section shows the organ to be greatly enlarged by pockets of greenish-yellow pus throughout. The yellow tissue of the adrenal is present in thick trabeculæ between the pockets of pus, and the entire organ is limited by a thick, fibrous capsule. No connection can be seen between this organ and the abscess of the back.

The kidneys each weigh 80 gms. The capsules strip readily, leaving smooth, shining surfaces. Gross section shows the markings to be distinct and the pelves and ureters normal in appearance. The bladder and genital organs appear entirely normal.

The aorta is smooth and shining throughout.

Enlarged lymph nodes are found at the bifurcation of the trachea and along the bronchial tree, but all of these are dark in color and homogeneous, with no evidence of either caseation or calcification. Slightly enlarged nodes are also found in the mesentery, but these are pink and show nothing of interest.

Culture of the heart's blood is negative.

Diagnoses:
1. Organized pneumonia of lung.
2. Actinomycosis of lung.
3. Actinomycosis of adrenal.
4. Localized fibrinous peritonitis.
5. Healed chronic pleuritis (bilateral).
6. Cardiac dilatation.
7. Acute cholecystitis.
8. Emaciation.

Microscopic sections show:

Lungs: Many of the alveoli are empty and normal in appearance. Many are filled with new-formed connective tissue which is evidently replacing the exudate in them. In other areas the alveoli are filled with pus cells but in yet other areas there are accumulations of pus cells which have replaced the aveolar walls and represent abscesses and in the center of some of these are distinct and typical ray fungi.

Adrenal: This shows large masses of pus cells in some areas and in other areas there is extensive necrosis. Between these areas there are divisions or septa of connective tissue and in the centers of some of the pus cells are typical ray fungi.

The heart, pancreas, and spleen show nothing of interest.

Liver: The liver shows an atrophy of the cords

around the central vein and in the centers of these is a prominent deposit of brown pigment. At the periphery of the lobules there is a marked fatty change of the cords.

Gallbladder: This shows a wall which is thickened to a very marked degree. This thickening is evidently caused by an edema, but scattered throughout—especially near the mucosa—are many lymphocytes and pus cells.

DISCUSSION

Dr. Schlutz: This is certainly a very rare case. Parasitic diseases are particularly rare in our section of the country. They are about the last thing many of us think of. I don't know what the experience is farther south, where, I believe, they have a good many more cases than we have here. The *x*-ray plates remind me somewhat of plates I saw in Montevideo, South America. They have a great prevalence of hydatid cysts in that country. In the early stages of the disease they show some very puzzling *x*-ray pictures which would make many of us think of tuberculosis, but the men down there, being familiar with conditions, will spot them very readily. They turn out to be hydatid cysts. At the time I was there, Dr. Morquio had an unusually large number of children who showed this disease in the chest in various stages. The cyst generally breaks into a bronchus and the child recovers. The condition affects the head and lungs, and less often the liver. The brain cases are usually fatal, though a few have been reported as recovered. They think of hydatid cyst almost as the first thing, just as we think of tuberculosis first, due to the fact that they have so much of it. Sheep carry the parasite and the shepherd dogs give it to the children.

Actinomycosis is a rare condition, I believe, in this part of the United States. Personally I have never seen a case.

Dr. Ulrich: I had the pleasure of seeing these slides at the Pathological Conference and it is an extremely rare thing to have actinomycosis of the lung. Actinomycosis in cattle is a rather benign affair. In our medical cases we find actinomycosis is usually around the cecum and then in various parts of the body. To have it just in the lung is an extremely rare condition. Visceral actinomycosis is always fatal in human beings.

Dr. Zimmermann: I do not believe that actinomycosis is as rare as we are taught. Neither do I believe that local actinomycosis is necessarily very fatal. I have taken care of four cases of local actinomycosis the past two years. Two were in the tongue, one with quite a large abscess at the base of the tongue, reaching down as far as the hyoid bone. Another was the floor of the mouth, and the fourth was on the right side of the neck. This last one was quite a large, indurated mass covering an area of about 5 cms. transversely and 3 cms. perpendicularly. All of these people got well with even less trouble than with an ordinary local, suppurating infection. In no case was there any extensive excision; merely an incision so wide that the exit was bigger than the bottom of the abscess, and the wound packed with gauze soaked in picture of iodin solution. Although these cases were recognized as actinomycosis, and treated with iodin, and iodides given internally, it is not inconceivable to me that there must be a good many such cases not recognized, treated with simple incision and drainage, that get well.

Dr. Christison: I have not had time to go through the literature, but a cursory examination does not show very much on actinomycosis of the lung in children. I am going to use this as a basis for future enlightenment on the subject.

Dr. H. B. Zimmermann (St. Paul) reported a case, and showed specimen, of carcinoma of the stomach in a woman who for three years had given a typical ulcer history.

DISCUSSION

Dr. Hamilton: Was this a conjunction of two pathologic processes?

Dr. Hynes: Had there been any loss of weight in the last few months?

Dr. Zimmermann: It seems inconceivable that the carcinomatous element of this lesion could have existed for a period as long as three years, it was such a small lesion. Whereas, the ulcer history in this woman extended back for a period longer than three years. It is a fact that the woman had lost weight but I may say that this was because she was afraid to eat and had almost starved herself to obviate pain.

Dr. H. L. Ulrich (Minneapolis) reported a case of Carcinoma of the Stomach (and showed specimen) which could not be diagnosed during life.

This case is a direct antithesis to Dr. Zimmermann's case. His was a rapidly growing, very obvious tumor (cancer) of the stomach. Mine is a rapidly invasive, but microscopic primary tumor of the stomach.

Mr. C. H., age 37. Admitted to hospital April 4, and died April 27, 1926.

Complaint: 1. Pain in lower thorax on both sides.
2. Pain in epigastrium after eating.
3. Pain in lumbar region.
4. Polyuria.
5. Sprained ankle.

There was no family history of tuberculosis or cancer.

The patient had "flu" in 1917; an appendectomy in 1918. He was married; three children living and well. On December 26, 1925, the patient sprained his ankle, remaining in bed three weeks (ankle still swollen when he got up). On February 6, 1926, he reported to the dispensary, complaining of fullness and pressure in chest with sharp shooting pains on both sides. He had a gnawing sensation in the stomach one-half hour after eating. A heavy meal particularly brought this on; milk and toast did not provoke pain.

On February 13, 1926, he was put on ulcer diet with considerable relief. February 19, 1926, had pain in the lower abdomen; pains were sharp and radiated through to the spine. On March 21, 1926, the pain in the lumbar region again became severe and kept the patient awake nights. Four days later the patient noticed the urine was red in color. Nocturia three times; day six times. Complained of being constipated three days prior

to admission; and passed black tarry stools with an enema.

Physical Examination: Skin smooth and dry. Eczema over left arm and forearm. Scleræ are icteric Tongue—papillæ are somewhat smooth. There was emaciation of the thorax. Heart and lungs were negative. The abdomen was scaphoid shape; no masses were made out. The spine from the 10th thoracic is fixed; tenderness over the sacro-iliac joints.

Laboratory findings: Anisocytosis + + +
Poikilocytosis + + +
Polychromatophilia + + +

	April 5	April 7	April 14	April 26
	65%	47%	33%	23%
Hemoglobin	C. I. 89	(1.02)	(1.16)	(1.13)
Red	3,950,000	2,310,000	1,580,000	1,120,000
White	8,900	13,000	18,000	24,320
Polymorphonuclear	49%	68%	68%	84%
Lymphocytes	40%	19%	28%	11%
Monocytes	1%	4%	1%	4%
Eosinophiles	10%	8%	3%	1%

Nucleated reds + +
Color index indicates primary anemia.
Fragibility test normal.
Gastric analysis: No free HCl.
Feces: Blood and pus.
Urine: Sp. gr. high; no albumin; sugar negative.
April 26. Urine: 1st examination: Reds 10-20; whites 1; bile and urbilin in urine on April 2, 1926; no biliary pigments after April 8th.
Urobilin 1+
Urobilinogen + once, otherwise negative.
Functional test of kidney 25% – 22%; total 47%.

Blood chemistry:	April 5th	April 12th
Urea	31.3	25.
Creatinin	1.7	1.3
Sugar	.112	.143

April 26: Cholesterol 476 mgm. per 100 c.c. Blood culture negative.
X-rays: Stomach—negative.
Colon—colitis
Chest: Increase in vascular markings suggesting congestion.
Spine: Chronic hypertrophic arthritis of lumbar spine; chronic arthritis in sacro-iliac joint.
Skin: Lichen chronica simplex.
Fundi—negative.
Neurologic examination negative.
Diagnostic Impressions:

1. Malignancy of the gastro-intestinal tract with metastasis to liver.
2. Pernicious anemia with superimposed streptococci septicemia.
3. Hodgkins.

Pathological Findings: The liver is riddled with fairly large white irregular areas of metastasis. On the posterior surface of the stomach, near the greater curvature, the mucous membrane is puckered with a central healed ulcer. There is no induration of the muscular wall. Microscopically this ulcer proved to be carcinomatous. There was involvement of the regional lymph nodes; glands of the hilus of the spleen; gastro-hepatic ligament and retroperitoneal lymph nodes, esspecially around the spine; metastasis to the liver, pancreas and lungs.

Conclusions: This case is striking from several angles: (1) He exhibited a rapidly developing anemia of a primary type (color index high) without any evidence of hemorrhage, and no particular hemolysis. The hemolysis idea is emphasized because during the period anemia occurred there was a rapid disappearance of jaundice. (2) The gastric symptoms were first noted February 6, 1926, with pain in the lower abdomen thirteen days later, February 19th. At this time invasion of the lymph glands along the spine must have occurred. (3) The acute infectious temperature curve, leukocytosis, with progressive anemia and no evidence of localizing symptoms. It must be added, however, that acute invasion of the liver by carcinoma can do this. (4) The rapid and extensive invasion from an almost microscopic lesion primary in the stomach.

The meeting adjourned.

Carl B. Drake, M.D.
Secretary.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

MEDICINE

SUPERVISORS:
F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE LARGE MONONUCLEAR AND THE TRANSITIONAL LEUKOCYTE OF HUMAN BLOOD: F. A. McJunkin, M.D., St. Louis, Mo. (Jour. of Lab. and Clin. Medicine No. 1, Oct. 1926, p. 71). "Large mononuclear" and "transitional" are terms used for many years in the differential enumeration of the white cells of blood. The author describes in his paper certain microchemical and staining reactions which are helpful in the identification of these cells. His conclusions are that cells of three varying origins are included under this term:

1. The "transitional" leukocyte (monocyte of Naegeli), which is the peroxidase-reacting mononuclear phagocyte of human blood, and is of myeloid origin.

2. The "large mononuclear" which is a non-peroxidase-reacting cell characterized by certain granules, when the living cell is brought into contact with a dilute solution of neutral red. This cell is called "lymphenotheliocyte" by the author.

3. The "hemendotheliocyte" is a phagocyte derived from the vascular endothelium which may appear in the peripheral blood of the rabbit under experimental conditions. When stained with neutral red, this cell may present a diffuse granulation or may be devoid of granules. There is no evidence that it is present in normal human blood.

G. L. Berdez, M.D.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

RESULTS OF *X*-RAY THERAPY OF MALIGNANT GROWTHS OF THE URINARY TRACT: Lewis T. Mann, M.D., New York City (Surg., Gynec. and Obst., 1926, XLIII, No. 4, 529). The final results are given which were obtained from the use of deep *x*-ray therapy in the treatment of malignant neoplasms of the kidney, bladder and prostate. The cases were observed at the Mount Sinai Hospital, New York City, from the service of Dr. Edwin Beer and the members of that service. In this group of cases there are some treated with deep *x*-ray therapy alone, some by surgery combined with *x*-ray and some with radium and *x*-ray and others with a combination of all three.

The first group considered in this article was the malignant growths of the kidney, of which there were 11 cases. It was thought that the results with deep *x*-ray therapy were no better than those obtained by surgery alone as was shown by Hyman in a recent article.

The next group was bladder tumors, of which 17 were carcinoma and two papillomata. Relief from symptoms, dysuria, hematuria, et cetera, was reported in 3 cases only, and recurrences were noted in 13 cases. The author does not think life has been prolonged by the use of *x*-ray. The mortality was about the same as when no *x*-ray therapy was used; and there were no cures.

In the group of prostatic carcinomata, there were 12 cases. It was uncertain whether or not life was prolonged by the use of deep *x*-ray. Symptoms of hematuria, dysuria and frequency were relieved in two cases, but in the remaining cases it was temporary or none at all. No permanent decrease in the size of the tumor mass was noticed; however, none grew rapidly after *x*-ray therapy, and obstruction to urination did not occur. The author thinks that *x*-ray therapy should be used in carcinoma of prostate as a palliative measure.

M. P. Omohundro, M.D.

POLYCYSTIC KIDNEY: Carmelo Atonna and Johns H. Morrissey (Ann. Surg. 1926, 84, 846-94—). Within the past five years there has been an increase in the number of polycystic kidneys diagnosed before necropsy, due largely to the aid of pyelography. The authors classify them into three types.

First, those with renal insufficiency, rapidly followed by death. They are hopeless from the standpoint of treatment and are usually diagnosed only at necropsy. The second group are those presenting symptoms of chronic nephritis with dull back pains, headache, visual disturbances and blood-pressure changes. The diagnosis is difficult especially if the cysts remain small. As the cysts develop in size the kidney tissue undergoes atrophic degeneration as the result of increase in the intracapsular pressure, especially when the capsule is firm and unyielding as a result of inflammatory change.

A third type of cases includes those in which symptoms appear that direct attention to the urinary tract. The development of cysts adjacent to the pelvis may produce intrapelvic hemorrhage and hematuria, sometimes accompanied by ureteral colic.

The value of pyelography in diagnosis cannot be overestimated although it must be used with some caution because the reaction may be severe.

Medical treatment is, as a rule, the method of choice and the principles guiding the treatment of chronic nephritis should be closely followed.

Numerous examples of nephrectomy for a kidney tumor, afterwards discovered to be a polycystic kidney, are on record. The mortality of this procedure is very high, as the condition is practically always bilateral. The most efficient surgical procedure has been puncture or excision of the cysts and this method of treatment has been championed by Rovsing. Opinion is divided, however, and Brin reported the mortality in sixteen cases treated in this way at 25 per cent.

Hematuria as a symptom occurred in one-half of the cases reported by one investigator. It is usually intermittent in character, lasting for several days or weeks and followed by a complete remission. In the pyelogram the pelvis is stretched out to four or five times its normal length with separation of the calices at each pole. There is usually but slight change in the depth of the pelvis.

Harold E. Simon, M.D.

PARALYTIC ILEUS AS A COMPLICATION OF ACUTE APPENDICITIS: Guilford S. Dudley, M.D., of New York City (Annals of Surgery, Vol. LXXXIV, No. 5). The author thinks that intraperitoneal infection is the cause of the condition known as paralytic ileus, which may cause varying degrees or total obstruction. If total obstruction does not occur it is thought that it is the individual's resistance which overcomes the infection. It is also stated that it differs from mechanical ileus, because of the tendency to spontaneous revolution of the obstructing factors. He thinks that the abdominal distension, which is a common postoperative complication without infection of the peritoneum, is due to a diminution of intestinal muscular activity and is caused by operative trauma. It is dis-

tinguished from true paralytic ileus in that it never causes complete intestinal obstruction.

The conclusions of this article are based upon a study of 48 cases of acute appendicitis which showed diffuse uniocalized peritoneal infection at the time of operation and occurred among 540 cases on the Second Surgical Division of Bellevue Hospital. Of these 48 patients 26 died and 22 recovered. Of the 22 that recovered, 2 were complicated by the paralytic type of obstruction—one of these with operation and the other without re-operation; 12, or 25 per cent, of these developed intestinal obstruction of the paralytic type and 10, or 40 per cent, of the deaths were due to intestinal obstruction.

It was thought that possibly the delay of enterostomy in the earlier cases was probably responsible for the high ratio of deaths to recoveries.

The author recommends that every acute suppurative appendicitis should be treated surgically with a view to possible subsequent development of paralytic ileus, which first calls for minimum operative trauma and spread of infection. Treatment recommended following operation is local treatment to abdomen, saline solution by hypodermoclysis, and withholding fluids by mouth for 24 hours or longer and free use of morphine. Then if distension and vomiting occurs, gastric lavage and colonic irrigations are indicated. If there is still no relief drainage of the intestinal tract by jejunostomy should be done.

M. P. Omohundro, M.D.

THE MANAGEMENT OF CARCINOMA OF THE ESOPHAGUS: M. C. Myerson (Surg., Gynec. and Obst., 1926, 43, 690-695). Carcinoma of the esophagus occurs usually in men after the age of 50. The most frequent site of the lesion is the middle third of the esophagus; that occurring in the lower end is usually associated with and secondary to a carcinoma of the stomach. While others are attempting to learn the cause of cancer it is our duty to make the remaining term of life of these patients as comfortable as possible.

Today gastrostomy is advocated by a majority of men. When employed, it is to the advantage of the patient not to delay until the later stages of the disease when the mortality of the operation becomes an important factor. It is a safe procedure when performed early but at best is uncomfortable and embarrassing. Quick is of the opinion that radium therapy has but little influence on this type of lesion.

A third method that has not yet been taken up in this country to any extent is the method of dilatation plus intubation of the carcinomatous area. The author believes it to be a proved substitute for gastrostomy and an improvement over dilatation alone. When intubation is practiced, dilatation is required only once and the tube is worn for the rest of the patient's days provided silver tubes are used.

He recommends that the dilatation be done over a string and through an esophagoscope. The esophagoscope is then withdrawn and the intubation tube dropped into the upper esophagus by means of a Jackson speculum. The esophagoscope is again introduced and the intubation tube gently placed in position by means of forceps. If necessary the procedure may be carried out in two stages. Its patency and position in the esophagus is checked by fluoroscopy.

The author employs a light-weight, solid German silver tube the upper end of which is expanded and funnel shaped. It is oval in shape and its caliber is greater than that usually employed.

The patient is permitted to eat anything provided he eats small enough quantities and masticates well. He is also urged to drink fluids freely with his meals. The patients do not feel the presence of the tube and can swallow the food to which they have been accustomed.

Harold E. Simon, M.D.

INTESTINAL OBSTRUCTION: W. B. Holden (Arch. of Surg. 13, 882-886), 1926. There is no phase of abdominal surgery that offers so great an opportunity for improvement in its results as that of intestinal obstruction. The majority of deaths following operations are due to late operations.

There are five cardinal signs and symptoms in the diagnosis:

1. Pain, sudden in onset and severe and cramping in character; 2. Vomiting, at first reflex but later due to an overflow from reverse peristalsis; 3. Blocked bowel; 4. Visible peristalsis which is an early rather than a late sign and is very significant; 5. Absence of fever during the first forty-eight hours.

There are other signs and symptoms but these five are sufficient to make the diagnosis. The use of morphine obscures the diagnosis, and together with the giving of cathartics is responsible for many of the deaths in these cases.

An early operation within the first twelve to twenty-four hours is imperative, and an ample mid-line incision, with evisceration of the obstructed portion of the bowel, is essential to finding and relieving the cause of the obstruction. In addition, the bowel must be emptied of its toxic contents and this the author accomplishes by inserting a piece of glass tubing of large caliber into the intestine near the point of obstruction. The glass tubing is connected with about two feet of rubber tubing and the fluid is forced out of the intestine by gently stripping it from above downward. Temporary ileostomy is not used because it usually provides drainage of only a few loops of bowel. Morphine is given post-operatively and fluids are supplied by proctocylsis. Gastric lavage is rarely necessary if the bowel is thoroughly emptied.

The author reports a series of 135 cases with 26 deaths from all causes, a mortality rate of 19.2%. By carrying out the above principles he believes that one need have no more dread of intestinal obstruction than he would of gall-stones, ulcer of the stomach or pelvic tumors.

Harold E. Simon, M.D.

PEDIATRICS

SUPERVISORS:
CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

HELIOTHERAPY AND ACTINOTHERAPY IN RELATION TO PEDIATRICS: Frederic W. Schlutz, M.D. (Amer. Jour. of Diseases of Children, December, 1926.) Light therapeutics, both natural and artificial, is gradually assuming a more important place in the treatment of disease.

Worringer (1923) found that the blood calcium increases when the children are irradiated by a mercury vapor quartz lamp. At the same time the symptoms of hyperexcitability disappear. The results were usually obtained within two to four weeks of treatment.

McCaskey says: "The changes produced by irradiation are eminently constructive, and belong to the plus side of the patient's vitality ledger."

Progressive pigmentation of the skin under ultraviolet ray therapy is an index of defense against excessive changes in the chemistry of the blood.

Cori and Pucher (1923) found that roentgen-ray therapy produced a marked increase in urinary nitrogen and phosphates. Analysis showed that the total calcium content of the irradiated animals was appreciably greater than that of the control animals.

Irradiation of the dogs increases the endogenous nitrogen metabolism, stimulates the absorption of calcium and phosphorus from the intestine, and decreases the blood sugar. These changes persist and are sometimes more apparent after irradiation has ceased. Serum phosphorus is markedly increased by irradiation, in some cases 300 per cent.

The use of light in the treatment of disease has been applied in many branches of medicine. Those of most interest to the pediatrician are tuberculosis and rickets.

To Rollier more than to any one else is owed the development of heliotherapy as a clinical aid. He has shown that a large number of surgical cases can be cured without operation. Rollier has dealt mostly with extrapulmonary tuberculosis. He believes heliotherapy would be a useful factor in the treatment of the great majority of cases of pulmonary tuberculosis. Both Rollier and Finsen were convinced that heliotherapy at a high altitude was most beneficial. Jaubert (1913) believes that the best results from altitude are obtained at an elevation of from 2,000 to 3,000 feet. At high altitudes, on the contrary, the air is transparent, free from solid particles, and easily traversed by the sun's rays, which pass through without absorption, and warm and invigorate the body of the patient while leaving the air cool and fresh.

Campbell (1916), in the treatment of bone and joint conditions, states that the most interesting features about heliotherapy are: 1. Sequestrums are rapidly expelled. 2. Marked and early beneficial effects are obtained in severe septic conditions. 3. There is a rapid evolvement of tuberculous processes resulting in bone ankylosis, not the mobilizing action Rollier speaks of.

Chilling may cause irreparable harm, therefore care must be taken that no breeze strikes the body. After each sun bath the patient is given a sponge bath; if the skin is very sensitive, a vegetable oil such as olive or coconut oil is applied.

Robertson (1924) is enthusiastic about quartz lamp therapy in cases of tuberculous cervical adenitis, lupus and tuberculids.

Heliotherapy can be used for tuberculosis of the lungs when the disease is of the simple focus type which approximates surgical tuberculosis in character. Good results have been obtained in patients with the pleural type, the bronchial asthmatic type and in those who have no fever and the activity of the disease has been arrested. Sun treatment for pulmonary tuberculosis is contraindicated in cases with smoldering activity of the tuberculous process, with a tendency to autoinoculate on exertion, to hemoptysis, and to other signs and symptoms of activity.

Hall (1925) considers that ultraviolet light is a potent remedy for pulmonary tuberculosis and that both adults and children do well when thus treated. Too rapid pigmentation is to be avoided.

R. N. Andrews, M.D.

STUDIES IN NUTRITION—CONSIDERATION OF THE FOODS: William Weston, M.D. (Archives of Pediatrics, December, 1926). When the four representative grains, wheat, oats, yellow corn and rice, are evaluated upon a fat, carbohydrate, protein, mineral and vitamin basis, it is found that each has certain advantages and disadvantages, but that if used in combination as whole grain, the result will show such a compensation that comparison with a single whole grain cereal is decidedly to the disadvantage of the single cereal.

Cereal products consist almost entirely of white bread and the highly milled preparations, such as cream of wheat, farina, grape nuts, corn flakes, etc. Consequently, pearl grits, farina and many others of this class are so deficient that their use should be discouraged.

Feeding experiments by several investigators have conclusively demonstrated that the ready-to-serve cereals as represented by grape nuts and corn flakes possess so little value that their use should be abandoned.

It is probable that an average size slice of whole wheat bread, made from especially selected wheat and properly milled, will contain a greater proportion of some of the essential nutritive elements than will an entire loaf of white bread. The cereals when used as whole grains, properly grown and scientifically selected, are among our most valuable foods.

Meats, including fish and poultry, are valuable sources of protein and of certain of the mineral elements, especially phosphorus and iron.

Pork and its products, ham, sausages, etc., are so difficult to digest, that they should be excluded from the

diet of children. Vegetables, especially spinach, green cabbage, string beans, beet and turnip tops are essential to normal growth, development and well-being. Raw cabbage is an excellent source of vitamin. McCollum considers green vegetables and egg yolk as second to milk in importance as a source of vitamin A and calcium. Fruits, especially the citrus fruits and tomatoes, occupy an important place in the diets of children and to a lesser extent adults.

The most valuable of the tubers are: Carrots, yellow sweet potatoes, white potatoes, beets, parsnips and rutabagas. Among the legumes may be mentioned kidney and navy beans, young green peas and snap beans. The chief value of the various nuts consists in their vitamin and mineral values. There is no satisfactory substitute for pure milk.

Among the more important conditions that influence the composition of milk are: Breed of cattle, feeding and care, season of the year, time and completeness of milking.

Milk contains in number all the inorganic elements necessary to nutrition. It is especially rich in calcium, the mineral element in which the American diet is most often deficient. Milk from properly fed cows will contain a liberal amount of vitamins A, B, C, D, and E.

In point of food value eggs occupy a position only second to milk in their nutritive value.

The more general appreciation and use of milk, cod liver oil, eggs, green vegetables, whole grain cereals and fresh fruits, in the diets of children, is perhaps the most notable achievement of the science of nutrition in the field of preventive medicine.

R. N. Andrews, M.D.

KETOSIS IN CHILDREN: Philip Cohen, M.D. (Archives of Pediatrics, December, 1926). There are three types of ketosis in childhood classified according to their carbohydrate metabolism. The first type is due to a depletion of carbohydrate reserves of the body by starvation, shows a hypoglycemia, and is quickly relieved by relatively small amounts of carbohydrates.

The second type is one where the carbohydrate metabolism is abnormal. This type is always caused by infection and may be due to either one of two causes, a temporary pancreatic insufficiency, or to a lowered hepatic function. The apparently diabetic type is best treated by glucose and insulin, and the apparently hepatic type can be relieved by glucose alone, except in severe cases, when insulin seems to be indicated.

The third type is one where the blood sugar is normal, the carbohydrate metabolism is normal, glycosuria is present and infection the cause. This type can be cured by glucose alone. The postulated mechanism is a deficient glycogenolysis or an excessive glycogenesis. This type is best treated with glucose alone, in spite of the glycosuria.

In all cases of ketosis, fluids should be forced and bicarbonate should not be given, but a buffer alkali may be used if an alkali is indicated.

R. N. Andrews, M.D.

ROENTGENOLOGY

SUPERVISORS:
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OBSERVATIONS ON THE FUNCTION OF THE STOMACH AFTER GASTRO-ENTEROSTOMY AND SIMILAR OPERATIONS: Arisz (Acta Radiologica, 30:vi, 1926). The author analyzes the conditions found in stomachs after gastro-enterostomy. These vary with the degree of emptying through the new opening, and with posture, which indirectly affects emptying. Peristaltic movements and the pyloric mechanism are not changed, but there is a lessening of the mobility. If ulcers continue to exist after enterostomy, they continue to cause spastic deformities of the gastric wall and to hinder peristaltic movements.

Two cases are described in detail where enterostomy was made, but in which the ulcers failed to heal. Both cases were successful in the control of symptoms, but subsequent operative check for other conditions revealed that the ulcer itself was not influenced in a favorable way, but grew worse, changing from a superficial ulcer of the mucous membrane into a deep indurated ulcer.

Walter H. Ude, M.D.

RADIOGRAPHY OF THE JOINTS WITH IODIPIN: Sievers (Fortschritte a. d. Geb. d. Roentgenstrahlen, Sept., 1926). The author recommends a 49 per cent solution of Iodipin as an opaque liquid for the radiography of joints, especially the hip joint. Iodipin is especially suited for this purpose, as it delineates, even in thin layers, sharply and full of contrast, is harmless for the tissues, and checks adhesions in consequence of the sesamoil which it contains. The method of study has been limited to the study of congenital dislocation of the hip joint. It is very helpful in the young, where diagnosis is made difficult by incomplete ossification, as it demonstrates the relative condition of the cartilaginous head and acetabular cavity, gives a surer foundation to the prognosis in regard to reposition and retention than with an ordinary roentgen-ray plate, as one can thus better recognize the details of the interior cavity of the joint, especially width and opening of the isthmus, situation of the limbus cartilaginous, and the condition of the surface of the cartilaginous acetabular cavity. Even irregular places in the covering of the joint cartilage of the head are demonstrable with Iodipin, as shown in a case of Perthes' disease. The Iodipin is also thought to have therapeutic value, being a mechanical buffer and chemically disinfecting the joint by means of the slowly liberated Iodine.

The technic of the injections is rather difficult, as one must carefully avoid getting any of the substance into the soft tissues in the neighborhood of the joint. The authors have arrived at a satisfactory method of making these injections, and describe this in detail.

Walter H. Ude, M.D.

THE ROENTGENOLOGIC DIAGNOSIS OF LIVER ABSCESS WITH OR WITHOUT SUBDIAPHRAGMATIC ABSCESS: Pancoast (Am. Jour. Roent., October, 1926). The roentgen-ray diagnosis of subdiaphragmatic abscess has become a comparatively simple problem, ever since it was first detected by this method. Hepatic abscess, however, has always seemed to be a very difficult condition to determine, until quite recently, when the pathologic aspect and its close relation with subphrenic abscess as a sequel, became known. We have to deal with hepatic abscess due to ascending portal or biliary tract infection. All other agencies and intrathoracic conditions likely to cause confusion in interpretation must be eliminated by carefully correlated clinical facts.

A study of many cases collectively reveals many important and characteristic features in common. The following essential principles must always be carefully considered:

1. A correct clinical history of the case is of paramount importance in order to lead to the correct interpretation of the findings.
2. A knowledge of the pathology of liver abscess.
3. Correct technic of the examination, which must include roentgenoscopy in order to be able to study diaphragmatic movements.
4. Ability and knowledge to differentiate the findings.
5. Collaboration with the clinical diagnostic procedure.

Roentgenologic features, briefly enumerated, are:

1. Elevation of the dome of the diaphragm, usually the right;
2. Absence of anything past or present above the diaphragm to account for these appearances, except a correctly interpreted lung retraction or small effusion;
3. Restricted movement;
4. The exclusion of numerous other conditions below the diaphragm.

Sixteen cases are briefly reported, and the findings in each are discussed.

WALTER H. UDE, M.D.

THE ROENTGEN TREATMENT OF METASTATIC CARCINOMA OF BONE: Phahler (Acta Radiologica, Vol. vii, p. 280). The author expects only palliation and not cure. As a result of treatment he has obtained prolongation of life of from one to four years. Healing of bone metastases can be obtained by means of Roentgen Ray Treatment even when there is an associated fracture. The treatment must be sufficiently effective to destroy the carcinoma cells in the bone, but the osteoblasts must not be destroyed, as upon these depends the process of recalcification. If the latter are destroyed the area undergoes liquefaction and subsequent abscess formation. Fifty to 80 per cent of an erythema dose to the skin is used, with sufficient portals to secure 100 per cent depth dose within a period of ten days.

WALTER H. UDE, M.D.

EYE, EAR, NOSE AND THROAT

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SURGICAL REMOVAL OF CORNEAL OPACITIES: Meyer Wiener Jackson Birthday Volume, There is experimental and clinical evidence to show that a more or less successful effort is made in the formation of new corneal tissue to replace that which has been destroyed. In rabbits there is a thickening of the corneal remnant after resection of a major portion of its thickness. Donders had found years before that the newly formed epithelium may cover the entire denuded area in two days and that it was thicker than before, but that it became gradually reduced to normal thickness; that the new corneal tissue gradually approaches normal thickness without ever actually reaching it; that no severe complication follows removal of one-half to two-thirds the corneal thickness.

Wiener was able to verify these results, except that epithelial regeneration required five to seven days. Salzer found true corneal regeneration in non-perforating trephine wounds, the process being most active just beneath the epithelium. Others have noted varying degrees of regeneration of the cornea, and Johnson has operated upon fifteen such cases with encouraging result.

The object of the operation may be cosmetic, prophylactic, for the prevention of recurrence of corneal ulcers, or therapeutic, for the improvement of visual acuity. Under cocaine anesthesia a crucial incision is made vertically and horizontally through the scar with a small, sharp scalpel, almost to the limbus and as deep into the cornea as possible without perforating it. The apex of one quadrant is now lifted up with a tiny iris hook and, with the scalpel, is gradually dissected back to the periphery, taking care to remain in the same corneal layer throughout. This is not difficult, for the line of cleavage is clear. At the periphery each quadrant is resected. As after-treatment, atropine and xeroform (the latter as a powder) are used when the dressing is changed each day. In five to seven days the epithelium is completely formed. About two weeks later the cornea is usually milky and more hazy than just after the operation, but gradually this clears and the cornea becomes more transparent and the vision improves.

Three cases operated upon in this way are reported, with good results; of course there are also many failures. When there has been perforation of the cornea with an anterior synechia the prognosis is poor, unless the scar is first resected in the most favorable area, and an iridectomy is done later.

The less inflammation and the more free the cornea from vascularity, the better the result. Xeroform is used after the operation because it is a very fine powder which does not cake or irritate, has strong antiseptic propertics and has an anesthetic effect. Cold applications are then applied for several months to prevent vascularization, and dionin is used, beginning with a 1 per cent solution and increasing to saturation.

If a localized ectasia develops, the addition of 1-1,000 adrenalin solution to the usual treatment corrects the swelling.

Virgil J. Schwartz, M.D.

SEROUS EXUDATE BENEATH THE RETINA CLINICALLY SIMULATING SARCOMA OF THE CHOROID OR CILIARY BODY: William T. Shoemaker, Jackson Birthday Volume. A man, aged 73, complained of gradual loss of vision in the left eye for several months, especially in the upper field. He had had pneumonia a year ago, but, so far as he knew, was now in good health. The right eye was normal except for ametropia. The left eye showed a slightly shallow anterior chamber and a sluggish pupil with a visual acuity of hand movements at close range in the lower field only—not in the upper field at all. The left anterior chamber was rather shallow and the pupil gave a sluggish light reaction.

The ophthalmoscope showed a widespread detachment of the retina below, nasally and superiorly. A smooth, clear-cut, pendulous brownish mass was seen directly behind the lens, upward and inward, apparently continuous laterally with the ciliary body. The detachment was not movable, that is, it was solid, and while the surface and edge of the main mass were too smooth to be a typical sarcoma, all the other evidence, including dense opacity on transillumination, pointed toward a solid growth.

On removal and section the eyeball was found to contain, not a sarcoma, but a large, serous subretinal exudate of dark color. Therc was evidence of an old iridocyclitis which might have resulted from the pneumonia.

Virgil J. Schwartz, M.D.

SALE OF ULTRAVIOLET GENERATORS TO THE PUBLIC

The Council on Physical Therapy, on the basis of the availablc evidcnce, contends that the sale of generators of ultraviolet cnergy to the public for self-treatment is without justification. The Council bases its condemnation of the sale of such apparatus on the ground that harm may result from such use by the public; becausc unwarrantcd confidcncc in the therapeutic value of treatment with such apparatus may lead to attempts to trcat serious conditions; because the possessor of such apparatus would fail to obtain a correct diagnosis of his condition; and because the practice would encourage the sale of useless and fraudulent apparatus. (Jour. A. M. A. Jan. 22, 1927, p. 245.)

CASE REPORTS

Members are requested to report interesting and unusal cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

MECKEL'S DIVERTICULITIS WITH GANGRENE*

REPORT OF CASE

Martin S. Sichel, M.D.
Resident Surgeon, Minneapolis General Hospital
Minneapolis

J. W., aged 21 months, female, was admitted to the General Hospital on December 3, 1926. The present illness was of 72 hours duration. The onset was characterizcd by acute cramplike pain throughout the lower abdomen. At this time an enema was given with good results. That night the patient suffered more cramplike pain and vomited several times. The pain and vomiting persisted during the following day. There was no bowel movemcnt from the onset up to the time of admission, nor was any blood or mucus passed. Twcnty-four hours prior to admission the abdomen became distended.

Physical examination showed a twenty-one months old female child, moderately prostrated, pale, acutely ill, but in good general physical condition. She was moderately toxic. Thc head was normal, the pupils reacting to light; the throat was negative. The heart was normal and the lungs clear. The abdomen was moderately distended and everywhere tender to palpation. There was gencralized muscular rigidity most marked in the right lower quadrant. No definite masses were made out. The extremities and rcflexes were normal.

On admission the tcmpcrature was 100°; the pulse 130 but regular and of fair quality; and the respirations 24. The urine was negative. The W. B. C. 12,500, with 49 per cent polymorphonuclears, 37 per cent lymphocytes, and 14 per cent large mononuclears.

An *x*-ray of the chcst and abdomen showed the heart and lungs to be normal. There was a marked gaseous distcnsion of the intestines suggesting the possibility of an intestinal obstruction.

A diagnosis of an acutc surgical abdomen was made and it was decided to opcrate immediately. A differential diagnosis was madc between acute ruptured appendicitis with general peritonitis and acute intestinal obstruction from volvulus.

At operation under general anesthesia a lower midrectus incision was made. There was no free fluid in the abdomen. The appendix presented in the abdominal incision. The walls were reddened and injected and slightly thickencd but it did not seem sufficiently involved to account for the symptoms. It was

*From the Surgical Service. Division B, Minneapolis General Hospital.

removed and inverted. The abdomen was then explored after enlarging the incision and what was apparently a gangrenous bowel found just beneath the mid-line in the lower abdomen. Around the site of the gangrenous bowel there was a volvulus of the ileum, there being a dilated bowel above this point with redness and injection of the walls of the gut. There were many fresh adhesions about the volvulus and these were separated with difficulty, thus freeing the loops of the bowel. The gangrenous portion of the bowel was then seen to consist of a Meckel's diverticulum, about the size and shape of a thumb. This was located about 10 inches proximal to the ileocecal juncture. The gangrenous portion of the diverticulum involved about one-half of the lumen of the ileum. In order to remove the diverticulum it was necessary to resect the portion of the ileum to which it was attached. This was resected and an end-to-end intestinal anastomosis

Meckel's diverticulum with attachment to ileum.

done. An enterostomy was then done just above the anastomosis, introducing a soft rubber catheter into the lumen of the ileum. A large amount of thick, dark brown, foul smelling intestinal fluid was obtained upon opening into the lumen of the ileum. Two Penrose drains were placed in the abdomen for drainage and the incision closed.

The operation consumed one hour and forty-five minutes and the patient's condition at the end of the operation was very poor. Despite forced fluids and stimulations the child died four hours later.

The pathological examination of the specimens showed the appendix to contain numerous foci of lymphocytes in the serosa—a mild secondary appendix. The Meckel's diverticulum showed a wall that was entirely necrotic, with hemorrhages, and occasional areas of lymphocytic infiltration. A post-mortem was not obtained.

MYASTHENIA GRAVIS*

CASE REPORT

JOEL C. HULTKRANS, M.D.
St. Paul

This case is that of a young lady, aged 20, single, farmer's daughter, referred to us by Dr. George Earl. She came to the hospital complaining of difficulty in swallowing. Her trouble was first noted about a year and a half ago by the fact that at times her voice became nasal and if she was tired this was always more marked, and when she was especially fatigued she had to swallow with care or liquids would go up through her nose. She also noticed a general feeling of unnatural weakness throughout her whole body. She has a marked tendency towards constipation. Her condition remained about stationary, or probably a little progressive, until about two months ago, when she began to notice that her eyelids would droop at times, and when she was especially tired she had difficulty in keeping her eyes open. This was more noticeable on the left. Her eyes would tire after using them for short periods, and after continued talking her articulation became indistinct.

Her general physical and laboratory examinations were negative. Neurologically she had involvement of the third, seventh, ninth, and twelfth cranial nerves. Myasthenia gravis, when it affects the bulbar muscles, as it does in this case, produces all the features of a bulbar paralysis, from which it must be differentiated. There are three differential points which I will demonstrate in this case: (1) The absence of atrophy. In this case although the onset dates back a year and a half there is no atrophy of the affected muscles. (2) The degree of paralysis varies from time to time, becoming accentuated by fatigue. If we ask this patient to contract the musculature of her face or close her eyes, you will notice that she does it very well, and as she keeps it up I am sure you can all see that the contractions are becoming weaker until it is quite impossible for her to make any further contractions or close her eyes. If we give her a little rest she will be able to repeat the same performance. (3) The myasthenic electric reaction, a series of Faradic shocks which, produce at the onset contractions of the muscles affected and these contractions become gradually less and less until at last no reactions to the strongest Faradic shock result. If we wait a few minutes and then test again we find that the Faradic excitability has reappeared and can again be exhausted in a similar fashion With these three points the diagnosis of myasthenia gravis is of course obvious.

Comment: This condition is very rare. Its etiology is not known. Some of the theories advanced as to its cause are: toxic; that it is on a blood endocrine basis; or that there is a congenital deficiency of nervous tissue. As to pathology: A persistent hyperplastic thymus has been found in some cases, and should always be looked for; others report a round cell infil-

*Read before the Ramsey County Medical Society, Clinical Meeting, St. Joseph's Hospital, Oct. 25, 1926.

tration in the muscles; and some, microscopic changes in the motor cells. As to the prognosis, at best the outlook is not good, although spontaneous remissions and cures have been reported. As to treatment, best results are reported where a persistent thymus has been found and treated with *x*-ray. The only medication of sufficient value to mention is strychnia. Symptomatic treatment, and proper management mainly in evaluating the endurance of the patient, offer probably as much in results as any other treatment.

EPIDEMIC ENCEPHALITIS—ILLUSTRATING CHANGED CLINICAL PICTURE OF TODAY*

REPORT OF TWO CASES

C. Eugene Riggs, M.D.
St. Paul

Case 1.—H. Referred by Dr. Meyers, Superior. Age 20 years. Student in the Normal School; consulted us Sept. 9, 1926, complaining of paralysis of the lower limbs. There was a paresis of the upper extremities. Family history negative. Scarlet fever when a child. Influenza in 1918. Three years ago, while playing a piano accompaniment for a high school opera, he was under a good deal of nervous strain, due to the fact that he had to cover up mistakes of the players, by improvising during the act. After the opera was over, he almost collapsed nervously. Ever since this episode he has been very nervous and tense when playing in public. Shortly before Christmas, 1925, he became sleepless, restless, irritable and depressed. Later, awaking one morning, he noticed peculiar sensations in the limbs, which he regarded as rheumatic. There was also a good deal of pain and weakness in both legs. The attacks occurred, usually, at monthly intervals. During these seizures, which lasted a couple of hours, he was able to stand on his feet; ascending the stairs was very difficult, and he could scarcely lift his feet from step to step. The attacks continued until about April 1, 1926, when a different type of nervous phenomena added itself to an already complicated clinical picture. These have been occurring from every two to four days. They manifest themselves about three or four o'clock in the morning; he awakes and finds himself only able to move his head a trifle and the ends of his fingers; otherwise he is completely paralyzed until about three o'clock in the afternoon, when the paralysis disappears. He is perfectly conscious during this time; there are no sensory disturbances. He is able to tell when an attack is going to develop and when it is going to disappear. There is no involvement of the bowels or bladder; no vertigo. Hearing and sight are not affected. Insomnia preceded his illness and continued during his hospital stay until after the use of acriflavine intravenously. There have been clearly marked behavioristic disorders. These two types of symptoms—the first of a moderate character and the second when he was completely paralyzed aside from movement of the head and tips of fingers—have grown steadily worse since coming to the hospital.

The neurological examination showed a fine tremor of the extended fingers. Knee-jerks absent; left Achilles absent; right present. There was a marked loss of power in both limbs, especially in the left, while the upper limbs were slightly paretic. When lying on the floor, he could get up on his knees only; then had to be assisted to a standing position. The reaction of degeneration was present in both lower extremities; no sensory disturbances. There is, however, a slight facial asymmetry, evidently congenital, and bears no relation to his present illness. Aside from the behavioristic disorder, which was associated with a mild mental confusion, there has been no disturbance of the psyche.

Blood pressure 124 systolic, 85 diastolic; hemoglobin 92 per cent; red blood cells, 5,260,000; white blood cells, 6,800.

The serological examination of the spinal fluid was absolutely normal. After his second injection of acriflavine, September 24, he had one of the severe seizures. After the fifth injection he had another but it was very slight and this was the last. Under acriflavine, he regained muscular power very rapidly. A week after the first series of acriflavine injections had been administered, the knee and Achilles jerks returned. The restlessness, sleeplessness, mild mental confusion with behavioristic disorders, which was present on Septemper 9 when admitted, disappeared after the first few injections of acriflavine.

Certain unusual features give a special interest to this case:

(a) The possible relation of the facial asymmetry to the clinical picture.
(b) The absence of Netter's triad—fever, diplopia and somnolence.
(c) The two peculiar types of the clinical syndrome:
  (1) Peculiar sensations in the lower extremities with the associated pain and weakness occurring at stated intervals.
  (2) Attacks of complete paralysis with the exception of a slight movement of the head and tips of the fingers—a most unusual symptom complex.

The effect of acriflavine in this case was strikingly dramatic. After the first series of eight injections the symptoms were practically in abeyance—a startlingly rapid convalescence. The patient stated at this time he never felt better in his life and he ran up six flights of stairs to prove that he was again himself. Aside from sluggish deep reflexes, the patient returned home apparently perfectly well.

After the patient's return home, he had a respite of a couple of months, after which, unfortunately, the former symptoms returned, but to a much less marked degree.

Case 2.—E. Referred by Dr. L. J. Walker, Merrillan, Wisconsin. Twenty years of age; parents living and well; four brothers and one sister living and well. Usual childhood diseases; no complications. Had "typhoid dysentery" at the age of five years; influenza twice, 1918 and 1922. In April 1926, there was first

*Presented before the medical staff of the Chas. T. Miller Hospital, October, 1926, and November, 1926.

noticed a numbness in the ends of the fingers of the left hand. This extended up the ulnar side of forearm and disappeared in about two months. Last May, she experienced difficulty in walking, and this has been steadily progressive. Several teeth were extracted and some filled in the latter part of June. After leaving Normal School, June 1, both the patient and her mother noticed that she would sleep a great deal, especially afternoons. For about two weeks she slept every afternoon and in the mornings as well. About the middle of July diplopia developed. In September, she became sleepless and would lie awake two or three hours during the night. At this time she developed sialorrhea. Speech is slow and labored. We have previously observed this peculiar enunciation in encephalitis. Recently she has noticed marked sluggishness of movements. Since October 1 she has not been able to handle herself with her natural briskness and celerity. There is a slight vacuous facial expression; lateral nystagmus of both eyes, most marked toward the left. Pupils contracted; light reflex slight.

Dr. Burch reports that "there is paresis of right external rectus muscle—a fairly common incident in encephalitis; the fundi are negative."

There is a diminution of all forms of sensation to the midline in the thorax and abdomen; the arm and leg are similarly affected. Aside from subjective sensation of numbness in the arm, the right side is normal. Babinski in right foot; questionable in left; knee-jerks apparently normal. Achilles present; ankle-clonus in both feet. Loss of muscle sense in the lower and upper limbs. No abnominal reflex on right side; epigastric only on left.

The serologic reaction of the spinal fluid shows 7 cells per cu. mm. Wassermann negative; sugar .120; globulin positive; goldsol 4455554100. The paretic curve, as in this instance, occasionally occurs; the Lange curve, however, is usually observed in the luetic zone. The increase in the sugar content is marked; this is no longer regarded as pathognomonic. An increase of sugar in the spinal fluid has been observed in paresis, cerebral syphilis, in a majority of the febrile illnesses, in convulsions, brain tumor and dementia precox. The hemi-diminution of all forms of sensibility on the left side possesses a peculiar interest. It can in no way be distinguished from that observed in hysteria. In a patient suffering from cerebral arteriosclerosis, now under our care, this hemi-sensory defect is clearly marked. It must be due to a psychic factor present in organic and functional disease alike. Miss E. has just received her last injection of acriflavine and states that she is feeling very much improved. The diplopia has practically disappeared; the sluggish muscular movements indicative of a developing Parkinsonian syndrome are no longer noticeable. The improvement in speech is very apparent, but that which has impressed me most, following the use of acriflavine, is the marked lessening, on the left side, of the hemisensory defect.

These two cases clearly portray the great change that has taken place in the clinical syndrome of epidemic encephalitis since 1918. Its clinic features today are atypical, bizarre and unfamiliar to the great mass of medical men. I recall a patient of Dr. Gilfillan's, whom I had the opportunity to examine, evidently from the apparently prompt recovery an abortive type, who presented only two symptoms—a very severe epileptiform convulsion and a double Kernig. Another case in point was referred to me by Dr. Dodd of Ashland—a young man who had had an appendectomy, followed later by an operation for adhesions. This young man suffered from atrocious headaches, nausea, sleeplessness, marked asthenia and double Kernig. In both of these patients the spinal fluid was negative and there was no rise in temperature. In both H. and E. there was no acute initial illness. In the great majority of the cases that I have seen during the past two years, there has occurred no acute initial attack, but a gradual evolution of the symptoms.

PRIMARY TORSION OF THE OMENTUM

REPORT OF CASE

A. E. Comstock, M.D.
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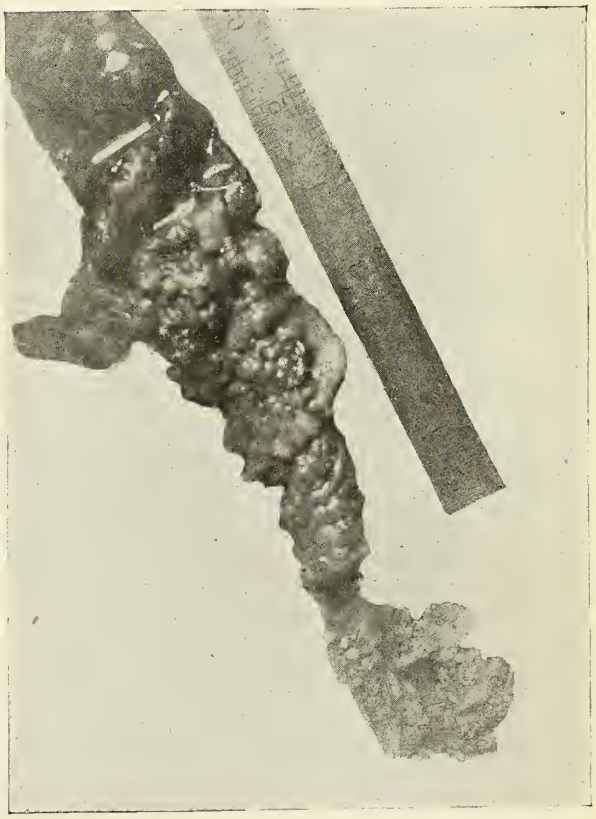
On the afternoon of December 7, 1926, this patient, a salesman, married, aged 38, developed a severe pain in his abdomen, mostly on the right side and almost



Primary torsion of the omentum as described in the text.

directly over McBurney's point. He was forced to go home from work and went to bed. The pain continued throughout the night and I was called to see him on the

morning of the 8th. I found him lying in bed with his knees drawn upward. He was afraid to be touched and could lie only upon his back.

Physical findings.—His temperature was normal; pulse 90; some pain on his right side and excessive tenderness over McBurney's point; he was not nauseated, nor had he been from the beginning of his illness. He gave a history of having had cramp-like pains a week ago, but these disappeared during the night. At that time he had diarrhea, which had persisted.

Treatment.—Ice bags were placed upon his side with food restrictions. His wife called me at 4 o'clock and stated that his pain was much relieved; she was told to call me if the pain increased in severity. That night about nine o'clock she called and stated that the pain was getting more severe in character. He was sent to the hospital.

Examination.—A leucocyte count showed 17,000; no nausea; temperature normal; pulse 90.

My diagnosis was an acute appendicitis.

Operation.—The next morning (December 9th) he was operated upon. I made a right rectus incision and found the cecum injected and firmly adherent, with a small boggy appendix, somewhat congested, but not of sufficient degree to cause his symptoms; there was a large quantity of bloody fluids in the abdomen and I began to search further for trouble. The intestines were injected, but not distended; no peritonitis was present. I found a large hard knot of omentum lying toward the midline and above the umbilicus. This was carefully drawn out through the incision and found to be a primary torsion of the omentum with thrombosis and discoloration as far as the hard nodular portion. It had twisted itself from the distal end upward for about a distance of ten inches, in fact as far as it was possible to twist on account of its attachment to the colon. This was removed and the patient closed and returned to bed.

Convalescence was uneventful.

MALT-NUTRINE NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Malt-Nutrine (Anheuser-Busch, Inc., St. Louis) is said to represent: "The Body-Building Strength of Choicest Hops and Malt stored up in this unadulterated, uncolored, almost predigested LIQUID-FOOD-TONIC." The product is stated to contain Alcohol, 3 Gm. and "Hop extractives" 0.20 Gm. The product is stated to be "a nutritive tonic" and "not a beverage" and to be indicated in the treatment "of nursing mothers, anemic men and women, convalescents from wasting diseases and the overworked and undernourished." Since Malt-Nutrine is to be used as a medicine and not as a beverage, it becomes subject to consideration by the Council on Pharmacy and Chemistry. The Council held that it is unacceptable for New and Non-official Remedies because (1) the therapeutic claims made for it are unwarranted and (2) the name is therapeutically suggestive. (Jour. A. M. A. Dec. 25, 1926, p. 2177.)

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

SYMPTOM DIAGNOSIS. Wilfred M. Barton, A.M., M.D., F.A.C.P., and Wallace M. Yater, A.B., M.D. 851 pages. New York: D. Appleton and Company, 1927.

THE SURGICAL TREATMENT OF GOITER. Willard Bartlett, A.B., M.D., D.Sc., F.A.C.S. Foreword by Charles H. Mayo, M.D. 365 pages. Illus. Cloth $8.50. St. Louis: C. V. Mosby Company, 1926.

In reading this book one is reminded of a statement made by John B. Deaver. When a young physician starts practice he acquires experience. After some years he adds judgment to experience and after many years he acquires wisdom. Dr. Bartlett has evidently attained the third degree.

All phases of the goiter question are covered. The writer not only draws on his own ripe experience but quotes freely from the opinion of others.

The chapters on Pathology and the Heart are treated by other writers.

Those on the preparation of the patient and anesthesia are of special interest.

Painstaking attention to details marks the author's operative technic. One may characterize the book as a whole as detailing the most approved methods of the operative treatment of goiter.

F. J. SAVAGE, M.D.

HER SON'S WIFE. Dorothy Canfield. Price, $2.00. Pages 302. New York: Harcourt, Brace and Co.

In a recent editorial in the Journal of the American Medical Association, attention is called to the fact that the chiropractor has just made his debut as a character in literature in Dorothy Canfield's recent novel "Her Son's Wife." The regular physician has long been a favorite character in literature but the appearance of the chiropractor in fiction is apparently an innovation. The author, however, does not commit herself by designating him as a chiropractor but merely refers to him as "the quack doctor, Dr. Pell." So the reader makes his own deductions from the diagnosis of "one little corner of bone slipping past another" and the treatment of massage and electrical applications over the spine, although there is no reference to any spinal adjustment.

The story is that of a widow who has raised her only son to manhood only to virtually lose him through his marriage to a girl of a very inferior type. Lottie is pretty, passionate, shallow, selfish and inefficient with nothing in common with her serious minded mother-in-law. The older woman devotes herself to the child, a little girl, known as Dids, who seems to resemble her dead grandfather. But the grandmother finds herself thwarted on every side by Lottie's ideas and influence and it seems as if the child must grow up into a replica of her mother. But Lottie, who is greatly bored by life, turns to ill health as a diversion, and says, "I wish I could get a decent doctor. Dr. Dewey takes no interest in you unless you have a broken bone." So she

calls Dr. Pell because "he has helped Mrs. Flacker's cousin's wife so much." He comes to the house and displays a magnificent physique and a magnetic personality which greatly impresses the patient. He carefully scrutinizes both Lottie and her mother-in-law and finds that the former is easily amenable to any suggestion of symptoms and at the same time divines that the older woman, for some reason, will not be antagonistic to either himself or his methods.

The reason for this is that Mrs. Bascomb realizes that a life of invalidism for Lottie will remove her influence over Dids and allow the child's life to develop along the best channels. Dr. Pell assures Lottie that at some time she must have slipped and hurt her back and says that the pain in her feet must "come from nerves running down the back-bone." He then comes regularly three times a week to give her treatments. On Tuesdays he brings a complicated electrical apparatus, giving off a green fire, and runs a glass tube up and down her spine. Thursdays were vibration days and out of a velvet lined case came a little rubber headed hammer which pounded her back until she was breathless. Saturday was the day for psycho-manual manipulation, which was massage up and down the back by the doctor's own soft, warm hands anointed by a smooth, creamy, fragrant ointment. For this he always lowers both the window-shades and his voice and following the treatment Lottie lies for hours in a delicious lassitude. She liked Saturday best. As for the doctor, his monthly check gradually began to look as regular and impersonal as the dividend from an investment.

During all this time Mrs. Bascomb is suffering great agony of spirit for her passive part in the deception but feels that the child is worthy of the sacrifice of the mother, the old story of the struggle of the older generation to give the younger one a chance. Some doubting spirits may question the financial marvels accomplished by the older woman's salary as a school teacher. Others, especially physicians, will wonder that the strength of a middle aged, frail woman could be equal to the house-work for a family of four and the greater care of an invalid as well as the exacting duties of the school-room; but these are minor details and do not seriously detract from the book.

The story is written in Dorothy Canfield's clear and fascinating manner and will prove to be of benefit and interest to any serious minded reader, either lay or medical. The character of Dr. Pell is treated in a most matter-of-fact and unprejudiced manner but his quackery is described so accurately and openly that the reader must be consciously or unconsciously influenced toward regular medicine by the subtle exposé of the quack. The story seems to put the quack in his proper place in the sun and should be especially interesting reading even to a physician. At the same time the placing of "Her Son's Wife" in the hands of the laity should exert considerable influence against the cults and because of its easy and interesting style should be of even greater value than the popular "Medical Follies."

MARGARET WARWICK, M.D.

SURGERY OF NEOPLASTIC DISEASE BY ELECTROTHERMIC METHODS. George A. Wyeth, M.D. 316 pages, 137 illustrations. Price, $7.50. New York: Paul B. Hoeber, Inc., 1926.

Dr. Wyeth's book on Surgery of Neoplastic Disease by Electrothermic Methods should be in the library of every surgeon. This volume contains an explanation of the different types of currents and the machines that deliver them. In addition the author has clearly outlined the use of the different currents. Lesions of the various anatomical divisions of the body are grouped and their treatment described in detail. This book is profusely illustrated so that any surgeon who cares to study it should get a working knowledge of electrothermic methods as used in the practice of surgery.

Electrothermic methods of treating neoplastic disease have not been used to their fullest extent by all surgeons. Until the publication of this book we did not have a practical, comprehensive article on the subject.

The contents are divided very logically into chapters, the illustrations are listed and the book contains a very complete index, so that as a reference volume it should be very useful.

GILBERT J. THOMAS, M.D.

HYGEIA OR DISEASE AND EVOLUTION. Burton Peter Thom, M.D 107 pages. New York: E. P. Dutton & Company, 1926.

A small volume which looks at medicine and the progress of the world from a far distance, seeing the entire progress of humanity from the perspective of civilized advance. He observes rightly that the lower forms of animal life are free from disease in large measure: that as one advances in the scale of animal life one finds more and more increase of disease, especially parasitic disease, the living of one animal on another; sometimes without injury to the host, other times with injury. Man, the highest of all forms of life, is subject to the most varied types of disease. "It is probably that all, or nearly all, of the killing diseases were established pathologic entities at the dawn of history. The possible exceptions were some of the epidemic diseases, although these are probably much older than is supposed. As civilization advanced the number of man's disease enemies increased and whenever a new disease appeared, its toll of life was invariably heavy, until, after many generations, a certain degree of immunity was established. The untempered violence of some of these diseases, especially when they assumed epidemic proportions, leaves us in wonder that humanity has survived their terrific assaults."

"For thousands and thousands of years—at least five hundred thousand, possibly a million, mankind has inhabited the earth. During that time he has been threatened with many perils, just as he is now. But he has succumbed to none of them. He has overcome them all." So will he overcome those that may threaten him in the future. Whatever problems arise, all these problems will be met and solved, and in the solving of these circumstances—whether overpopulation, undernourishment, insufficient coal, or diseases—there will

arise the "Golden Age" such as no past life has ever experienced.

DANIEL H. BESSESEN, M.D.

MEDICAL FOLLIES. Morris Fishbein. $2.00. New York: Boni and Liveright, 1925.

This instructive and entertaining book is not new, having been published in 1925, but it is being so widely read and it can be of such great value to the medical profession that it merits consideration at the present time. It is written by Morris Fishbein, editor of the Journal of the American Medical Association, and Hygeia, popular lecturer, and author of many medical articles in current magazines and newspapers.

It is a treatise of many of the medical subjects which are, at the present time, being so widely discussed by the general public. It is written in a dignified yet simple style which may be easily read and appreciated by the lay mind. All of his statements are explained and verified by scientific facts and reasons. He starts his discussion with a description of one of the first quacks, one Elisha Perkins, who practised upon a gullible public as early as 1760 by means of his famous "tractors." He then takes up Homeopathy, Osteopathy, Chiropractic and Abrams' Electrical Reactions. The history of each of these cults is given, together with their method of operation and the reasons for their short life as compared to that of regular medicine. He says that people go to these cults because "some friend, who has been aided, urges them to go and because physicians fail them."

Another chapter is devoted to "Fads in Health Legislation" and shows the futile and ridiculous attempts of governing bodies to protect health by laws. "Birth Control" is discussed from the scientific viewpoint and considered as an unsolved problem because of the lack of a sure yet safe contraceptive, and "Rejuvenation" is shown to be a fallacy. "Antivivisection" is treated in a most able and convincing manner and the necessity of animal experimentation to the welfare of mankind and to the progress of medical science is proven, and he says, "Shall we permit man to die or to suffer mutilation to spare the feelings of the white mouse? Isn't it a question of sparing the hyperesthetic sensibilities of some idle woman rather than the duller sensibilities of some lower animal?"

Bernarr McFadden and his physical culture magazines with their worship of muscle and their sex appeal are disposed of in a highly entertaining and satirical manner. Another chapter is devoted to "Medicine and the Press" where the reticence of the medical profession toward the press is justified by numerous quotations of misstated facts showing that the press can not be depended upon to report medical subjects in an authentic manner. He closes with a chapter on "The Science of Healing" in which he considers the romance and dramatic appeal in the development of modern medicine, saying, "The growth of scientific healing is as romantic a series of tales as ever captured the attention of a novelist; it is filled with dramatic incident."

Medical Follies should be read by every physician, his wife, every medical student, nurse and associate of the medical profession, and these people, having acquired a first-hand knowledge of it, should do all in their power to bring it into the hands of the laity by placing it wherever several books are gathered together, as libraries, reading rooms and waiting rooms. Its perusal by the general public will bring a great deal of order out of the chaos of misunderstanding of medical subjects and problems and will give greater understanding, prestige, tolerance and confidence to the medical profession.

MARGARET WARWICK, M.D.

WANTED—Good man to locate in my hospital. Town 600. One competitor. Option of buying. Business $12,000.00 annually last six years. Want man at once. Address C-114, care MINNESOTA MEDICINE.

YOUNG LADY desires position as assistant in doctor's office in Minneapolis. Splendid education, ability to meet people, best of references. Kathryn B. Clark, 2003 Aldrich Avenue South, Minneapolis. Telephone Kenwood 8196.

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WANTED—Physician and Surgeon as partner in good paying practice. Complete equipment including X-ray. Excellent territory. Prefer a man about thirty years of age. For details write to L. M. Davies, 2103 Harriet Ave., Apt. 103, Minneapolis, Minn.

FOR RENT—Dentist has available in his suite in the Lowry building, St. Paul, two rooms with the use of one of the largest, lightest, and finest reception rooms in the building. Offices are suitable for one or two physicians. Rent, $55.00 a month. Address C-115, care MINNESOTA MEDICINE.

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OPENING for physician. Correspond with Dr. J. E. Engstad, Grand Forks, N. D. in reference to particulars.

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CANCER OF THE RECTUM*

ROBERT C. COFFEY, M.D.
Portland, Oregon

Members of the Minneapolis Surgical Society: I consider it a very great privilege to have been asked to stop off incidentally and talk to you this evening. To comprehensively study cancer in a particular location one must have an understanding of the general principles of treatment and behavior of cancer wherever found. The subject of cancer is important because so many of us are going to die of it. I believe it is said that one out of every thirteen men and one out of every nine women, reaching forty years of age, will die of cancer. Fifty per cent of all cancers are of the gastrointestinal tract. Twelve per cent of all cancers are cancers of the rectum. Thirty per cent of all cancers involve the stomach. The question of cancer is being much discussed now and the treatment of it varies a great deal. I know of nothing particularly new on the subject although there are those who would have us believe there are new and startling things. There is a wave now, as there has been at many times in the past, in the belief that cancer is a germ disease. Yet, there is now no more scientific evidence nor more enthusiasm so far as I know than there was thirty-five or forty years ago. My own opinion of it is that it would not make any great difference so far as the treatment is concerned. Such a discovery might lead to a diagnostic test analogous to the Wassermann test for syphilis, or, knowing the source, we might learn to avoid it to an extent. Certain individual who are forward-looking and seek to protect their pocket books in old age are bringing forth various serums for the treatment and prevention of cancer. We are liable to be deceived on that point if we fail to study some of the underlying principles.

There has been no disease in which an efficient serum, either as a preventive or curative agent, has been developed except in such diseases as produce immunity by an attack of the disease in question, as far as I have been able to learn. The germ of tuberculosis was discovered about 1882. Tuberculin was developed and was hailed as a great cure and yet tuberculosis has not been cured, nor will tuberculin prevent tuberculosis. We have known the spirochete of syphilis for twenty-five years or more. We have remedies for the disease but nothing to prevent it. Although tuberculosis and syphilis tend to produce immunity, cancer has very little tendency to produce immunity. I have seen only one case in all the cases I have observed that showed any tendency to produce immunity or cure itself after an operation and after recurrence. And even in this case the patient died of cancer in the end. The discussion of a curative or preventive serum, and more particularly the use of these various serums, is doing great harm to the cancer patient. There are thousands of people who are dying annually of cancer, as a result of misinformation.

The first and most important thing in connection with the treatment of cancer is to see it when it is curable. This is the only chance we have to do much for the cancer patient. To do this, we as surgeons must first educate the doctors and they in turn must educate the laymen. I think cancer is more or less a muddle in the minds of the people. You can talk to people about it and they don't really know what you mean. It is up to us to get some kind of a clear terminology to the people so that they can understand it and then they will know that these various irregular agencies are not going to cure them. One of the illustrations that I very often use in talking to patients is that of an unusual plant which may come up in a farmer's field. The farmer is not sure just what the plant is, is undecided as to whether he shall destroy it or wait and see what it is. Finally he destroys the plant and with it all its potentialities as a future pest in that community. But suppose on the other hand he neglects to destroy it. The plant blossoms, its seeds ripen and scatter in the im-

*Read before the Minneapolis Surgical Society, Minneapolis, Oct. 13, 1926.

mediate vicinity and next year there may be a thousand or more plants. He looks them over and sees them multiplying. He becomes suspicious and decides to take them all up and destroy them. His potential pest is thereby obliterated. But suppose he ignores the weeds instead and harvests them with his hay. Some of the seeds fall in the field, others by the roadside, others are carried away in remote places by birds and mice. It becomes a pest and a menace to the community, for he now will certainly not take time to seek out all these weeds and destroy them and after another year the pest is firmly established and the case is hopeless.

A patient asks: "What is cancer? What is the difference between cancer and a tumor?" A simple answer is: "A cancer is a lump or mass of nonfunctioning cells which have the power of growing and reproducing themselves after being transplanted to another part of the body. A tumor has not the power to grow and reproduce itself in a distant part of the body after being transplanted." A patient comes with cancer of the breast and you advise immediate operation. The patient counters with some such argument as that her sister is coming up in two or three months and she would like to wait until her sister gets here before she is operated upon. What kind of an argument are you going to make in this case? You may use the above homely illustration applied as follows:

In the body there are certain vessels carrying blood to every part of the body for nutrition. Coming away from every part of the body are lymph vessels which pick up and carry away unused and superfluous materials and empty them into the blood stream which circulates throughout the body and carries them to the eliminative organs such as kidney, liver, etc. In the course of these lymph vessels there are certain filters such as you might put in the waste pipe of a kitchen sink to catch any coarse substance that might block the sewer pipe or otherwise do harm. These filters are known as lymphatic glands. In the growth of cancer some cells are detached and are carried along the lymphatic vessels to the filters. These filters effectively detain detached cancer cells in the course of their journey toward the blood stream. Here in this gland or filter the cancer cell multiplies and forms another cancer. From this new point or cancer another cell may become detached and float on down to another filter or gland where it may be caught and multiply, forming a third cancer from which still another cell may be detached and float directly into the blood stream. The case is then hopeless for the cell will now lodge at some internal point where the blood vessels are too small to allow the passage of the cancer cell which in its new location starts a new growth out of reach of any form of treatment such as in the bones, the lungs, the liver, the kidneys, the brain, etc. It must at once be apparent that I am not speaking for the instruction of doctors on the cancer question. I am simply bringing forward an illustrative method of reaching the public and I am sure that if the public knew these simple facts, the mortality of cancer would be brought much lower than it is at the present time, for a patient who has this meagre amount of knowledge clearly inculcated may at once be made to realize the following points:

1. Cancer if it is discovered before a single cell has been detached from the original growth is curable by any destructive agencies whatsoever, whether the agency be the knife, the electric cautery, a simple hot iron, a caustic paste or what not.

2. If a single cell has been detached from the original growth and has traversed the lymphatic vessels to a lymphatic gland or filter located at a distance, the simple destruction of the original growth by any agency whatsoever, be that agency the knife, electric cautery, the cautery iron, or caustic paste, accomplishes nothing, for the cell which has lodged in the remote gland or filter is now engaged in the formation of a new cancer made up of exactly the same kind of cells as the original cancer and will destroy the patient's life just as soon as if the original cancer had not been destroyed.

3. If the original cancer and the lymphatic gland, including the one and only cell which has escaped, be removed by surgical measures, the patient will still be cured even though the operation may not be thorough.

4. But, if the surgeon lacks boldness or knowledge of the glands through which the cancer cells must travel to reach the blood stream, he may miss the one gland or filter which contains the one detached cancer cell. Thereby the patient's life is lost. The operation is a failure because it was poorly performed.

5. It is, therefore, apparent that it is very

important for a patient who has cancer to seek a thorough surgeon who is bold and well informed as to the method of spread of cancer.

6. If a single cell has escaped through the last intervening filter or lymphatic gland into the blood stream, the case is hopeless and no treatment whatsoever will greatly retard the fatal termination.

7. Inasmuch as there is no known method of determining whether a detached cancer cell has been lodged in the lymphatic glands or filters or when a cancer cell has escaped through these filters and into the blood stream, it is apparent that cancer must at once be classified as an emergency, for the time required for the passage of a cancer cell from the removable part of the lymphatic system into the blood stream may be very short. Indeed, it is possible the time intervening between curability and incurability may be measured in hours or even minutes.

8. Cancer is essentially a surgical disease and all agencies for the treatment of cancer should be in the hands and under the direction of the surgeon. For while the surgeon may not be technically skilled personally in such agencies as radiotherapy, he knows the mode of extension and the probabilities of cancer as well as possessing a thorough knowledge of the anatomy bordering on the areas to be treated. I think it is always well for the laity to know that the cancer cell is not a foreign body but that it is an embryonic or immature cell which has not yet developed to the stage where it can be used in the definite construction of the organs or the tissues of the body and is, therefore, not yet subject to the laws governing the coördination of cells in the body. It may, therefore, be classed as a lawless cell, although it so resembles the normal cells or tissues in which the growth has developed that only a very expert pathologist can tell the mature from the immature cell. McCarthy's study in the differentiation of cancer cells followed by the classification of cancer into types by Broders, constitutes the most important contribution which has been made on the cancer question in recent years. Broders found that in Class I, in which 25 per cent of the cells were embryonic and undifferentiated, 92 per cent of good results were obtained; in Class II, with 50 per cent of embryonic cells, 62 per cent of good results; in Class III, with 75 per cent of embryonic cells, 25 per cent of good results; in Class IV, with 100 per cent of embryonic cells, 10 per cent of good results were obtained. The Mayo Clinic, working on this basis, has shown why certain cancers should be treated with radiotherapy while others do best with surgery.

While this typing of cancer is most important in arriving at a correct relative prognosis in cancer at a given location, another and possibly more important consideration, taken from the purely surgical standpoint, is the question of the location of the cancer regardless of the type. From this latter standpoint the most important question is whether or not the obstructing lymphatics or filters in the course of lymphatic vessels draining a given cancer area are so located that they can be removed by radical operation. For instance, we know what a forlorn hope is removal of cancer of the stomach as compared with cancer located at certain other points. In cancer of the tongue the lymphatic filters are deep and inaccessible while in cancer of the lip the lymphatics are easily accessible and may be removed early. In lip cancer approximately 80 per cent of the cases are curable if operated upon early while in cancer of the tongue a cure is rare. Cancer of the breast furnishes possibly the most interesting field for study of the possibilities of cure of cancer. More than thirty years ago Halstead, Willy Meyer and others recommended the radical removal not only of the breast, but the overlying skin, the pectoral muscles, fascia and all the lymphatics up to the clavicle and around the axillary vessels, thus marking an epoch in cancer surgery in establishing the principle previously referred to in this paper, viz.: The one essential in the surgical cure of cancer is the radical removal not only of the primary growth, but likewise the lymphatic glands and vessels intervening between the growth and their entrance into the blood stream. Surgical curability of cancer depends chiefly upon this one point.

Until recent years cancer of the rectum was considered by many as not a hopeful field for surgery, first because of its almost prohibitive mortality and second because it almost always returned, in contrast to cancer of the sigmoid, which offered one of the most hopeful fields for cancer surgery. As a matter of fact, it has been stated that postmortem findings reveal the surprising fact that 60 per cent of patients with carcinoma of the sigmoid die from obstruction be-

fore any metastasis occurs. Surgery for cancer of the sigmoid and cecum is very favorable for the reason that the intervening or filter lymphatics can be easily removed by surgical measures. My work in surgery for cancer of the rectum dates back for more than twenty years. I was early impressed with the brilliant team work done by the two Mayos doing a combined abdominal and perineal operation, both working at the same time. I also was impressed by the fact that they had reduced the death rate in this radical operation in one stage to 25 per cent mortality with a certain number of three year cures. Soon the two stage operation came in. The mortality was materially reduced. After the mortality was reduced, the operability increased. The more severe cases were taken on and the mortality rate again arose in accordance. But the one thing which impressed me was that by the operation we were doing in the earlier days, the patient finally succumbed to cancer. It had been my experience that hemorrhage and sepsis were the two principal causes of operative mortality. A two stage operation had already been adopted by various surgeons, particularly recommended by the Mayos. Their procedure was to make a simple colostomy, then at a second operation a posterior resection was done after removing the coccyx and a portion of the sacrum.

I followed this plan for a number of years, this being the best thing we knew. Practically all the operative deaths came with the second operation from shock due to hemorrhage or to sepsis or a combination of both, for in this operation we not only opened up large connective tissue spaces, but also the peritoneal cavity. It also occurred to me that in this operation it was impossible to remove the upper lymphatics in the mesosigmoid; therefore, I deliberately planned a two stage operation in which most of the work was done at the first operation, for by this plan it was possible to remove not only the mesosigmoid but all the gland-bearing connective tissue in the hollow of the sacrum, under direct vision. By ligating and cutting the superior hemorrhoidal artery as it crossed the promontory of the sacrum, all the danger of hemorrhage was at once relieved. In this connection it is well to recall that in the first four operated upon by this method, both internal iliacs were also ligated. One of these developed such an extensive phlebitis in all the pelvic veins that I abandoned the ligation of the iliacs and depended entirely upon ligation of the superior hemorrhoidal. However, it is interesting to note that two of the four in which the internal iliacs were ligated at the time of the first operation, lived more than twelve years after operation and died without recurrence, and the one who had the severe phlebitis is still living, thirteen years after the operation, in perfect health at the age of seventy-six. After abandoning the ligation of the internal iliacs, four additional operations were performed prior to the publication of the original technic in the Annauls of Surgery, April 1925. In this technic the principal features were the large incision through the right rectus muscle; thorough examination of the liver and all the retroperitoneal space as well as the immediate neighborhood of the growth for possible metastasis which would make the case inoperable; mobilization of the sigmoid by cutting the peritoneum of the mesosigmoid and double ligation of the superior hemorrhoidal artery; permanent colostomy through the left rectus muscle using the proximal sigmoid; removal of the fat in the hollow of the sacrum; inversion of the distal sigmoid whereby it was drawn out through the anus; closure of the peritoneal surfaces over all the denuded pelvic surfaces without drainage, thus completing the abdominal operation. This technic was, of course, limited to growths located in the ampulla of the rectum and to those which had sufficient lumen remaining to permit a rectal tube to pass the growth for the purpose of inverting the sigmoid.

While there was but one death in the original eight cases operated upon without drainage, the convalescence following the first operation was usually quite stormy due to the fact that the connective tissue in the hollow of the sacrum which had been devitalized by ligation of the vessels, usually sloughed; as a result an abscess developed and perforated into the rectum. It was, therefore, necessary to wait until this had taken place. So a plan for drainage appeared to be a necessity. This was found relatively easy in women for a posterior colpotomy permitted the drawing of a large drain through the vagina, which relieved the situation. But in order to do the same thing in male patients, it was necessary to leave an intraperitoneal drain, thus thwarting one of the principal objects of the primary technic. After a closer study of the male pelvis, it was

soon found that a drain placed in contact with the inverted rectum and drawn out through the lower end of the wound could be enclosed in a peritoneal canal made by bringing the pelvic peritoneum together from the two sides above the drain. Thus the drain was extraperitoneal although brought out through an adbominal wound. This solved the difficulty as far as dealing with clearly operable, nonobstructive cancer of the ampulla of the rectum was concerned, but was not applicable to those formidable cases in which there was a stricture of the rectum proper or in those still more formidable recto-sigmoid cancers which were too high for a low operation and too low for a high operation.

On being confronted by this type and location of a cancer of the recto-sigmoid in the case of a very important individual who had a number of doctors in the family, I determined to apply these principles in another way and, therefore, after ligating the superior hemorrhoidal and mobilizing the rectum and sigmoid from the hollow of the sacrum even down to the tip of the coccyx and also mobilizing it from the bladder and prostate, clamps were placed low down on the rectum, leaving but a small stub of rectum. The rectum was severed between the clamps and the growth brought up and removed, the colostomy performed and the operation completed just as in the original technic except that the clamp on the stub of the rectum was allowed to remain and accompany the drain. Having succeeded with this technic in this type of case, I determined to apply the same principle in obstructive cancer lower down. By inclusion of these two latter classes, namely, obstructive cancer of the recto-sigmoid and obstructive cancer of the rectum proper, the mortality has been decidedly increased. For while I was able to report my first fifty cases with a mortality of less than 5 per cent, the operative mortality, since these more severe cases have been included, is brought above 7 per cent in a total of almost one hundred cases. The recurrences, of course, will be greater than in the original group of cases which included only the nonobstructive carcinoma of the rectum. In the original report of eight cases with one death I am able to show a record of four cases passing the five year period without evidence of recurrence, two of the four cases dying in the sixth year, two others living more than ten years, one of the two living into the thirteenth year in perfect health. The obstructive cases, of course, are farther advanced and, therefore, while we have not made a complete follow-up of these cases, we know very well that no such record as was shown in the first series of eight cases will hold good when all the types of cases are included as we now do. This only brings us back to the original statement that the only hope for cure in cancer of the rectum is early operation. Early cancer of the rectum is in my opinion amongst the most hopeful of all the cancers in the body for the reason that its peculiar location makes it possible to more thoroughly remove the lymphatics than in other parts of the body. By beginning at the promontory of the sacrum, and ligating the blood vessels and lymphatics at this point and removing all the fat in the hollow of the sacrum along with the rectum and fascia propria, one of the most ideal operations for cancer may be performed. I am entirely convinced that the prospect with cancer of the rectum as it comes to the surgeon of today is as good and more than likely better than carcinoma of the breast. Certainly it is much better than carcinoma of the uterus when treated by radical operation and many times better than carcinoma of the stomach.

Before closing, I would like to leave a few personal observations based upon my experience.

1. The most serious consideration in connection with the high mortality of operations for cancer of the rectum is the urological complications which are likely to be present in these patients in the form of deficient kidney function or prostatic hypertrophy. These are very serious complications and should be carefully investigated and considered before a decision is made to do a radical operation for carcinoma of the rectum.

2. The drainage remaining in place between operations must be ample and must not be encroached upon by pressure at its exit through the abdominal wall. My own preference is a roll of gauze wicks laid straight and surrounded by rubber tissue making a large cigarette drain and leaving plenty of gauze tip exposed at the sacral end.

3. No attempt must be made to close the wound following the second or proctectomy operation. The larger the opening left the less likelihood there will be of a troublesome discharging fistula lasting for months or even years.

Concerning modifications. Many modifications of the technic have already been suggested. I was recently attending a surgical meeting. One of my surgical friends saw me across the hall and came to tell me that he had done my operation within the past two weeks but added that he did it all at one stage. Upon being asked with what results, he said the patient didn't live. Another came to me very enthusiastically and said he had done a half dozen of this operation recently but he didn't drain. He did not state the results. This was not a modification, but my original plan which had been abandoned. It has also been suggested that a wound be made in the ischio-rectal space for drainage instead of using the abdominal wound. This is a very rational suggestion and is one to which I have given serious consideration, but it leaves convalescent patients with a sore front and back and requires turning the patient over for a second operation when he has already undergone a serious operation. Another modification which has received serious consideration by me, and in fact has been tried in one instance, is the suggestion of leaving the stub of rectum and anus, in serious cases where the cancer has been located at the recto-sigmoid junction, draining through the rectum with a tube, or by cutting the sphincters and packing the rectum. The case in which I tried this was one in which the patient almost died from uremia following the first operation. He hiccoughed at intervals for weeks. We finally gave up the thought of removing the rectum, drained for some weeks, then removed the drain and cut the sphincters. After nearly two months the patient developed severe chills. Finally an abscess broke through the rectum. Soon the opening healed again. The patient showed a marked sepsis so that it finally became necessary, in the face of these great difficulties, to remove the rectum. This was done, all the sepsis disappeared and the patient made a good recovery.

In dealing with drainage of these cases, it must always be remembered that we have denuded all the hollow of the sacrum of its normal connective tissue. That this concavity of the sacrum becomes a fixed wall in a large granulating cavity. If the outside opening closes early, pus dams up in this granulating cavity, dilates it and gives a condition analogous to an ischio-rectal abscess which has been opened and forms an ischio-rectal fistula. It seems that if a portion of the rectum is allowed to remain, the active circulation of this intestine causes the cut end of the rectum to heal over and close off this large granulating cavity in the hollow of the sacrum. Hence the absolute necessity of not only removing all the rectum and anal muscles, but of leaving the wound wide open until granulations close the wound from within outward. Also the experience of various operators, including myself, in attempting to remove the rectal cancer and yet retain sphincter control has been very disappointing for in most cases cancer returns. One of the most natural and rational questions that is asked is: Inasmuch as the second operation is only a five minute operation, why not complete it at one operation? In answer it may be said: In the first place the second operation is by no means so simple at the time of the first operation as it is after nature has thrown out reparative material, producing edema which constitutes a self limiting or actual line of cleavage which defines the tissues to be removed. In the second place, a patient who has been subjected to the long tedious first stage of the operation has about all he can do to furnish protective material for the time being. By opening up the connective tissue spaces around the lower rectum and anus, the absorbing wound surface is almost double in amount. This extra seems to necessitate just that much more fight than certain patients are prepared to make.

DISCUSSION

Dr. Mann: It has been a great pleasure to once more hear our old friend Doctor Coffey. He always gives something worth while. He is a progressive man and talks to his audience on things which he has thought out himself. It has been very interesting to hear his opinion as to what to say to the patients. It undoubtedly helps to bring them to a quicker decision for an operation. The operation which he has worked out, up to the point at which it is today, seems to me the best operation which can be done on cancer of the rectum provided it is within the judgment of the doctor to do it. There would be some inoperable cases which can be helped by either colostomy or one of the other lower operations. His schematic drawing here shows us the reason for abandoning the posterior operation. Almost the best reported statistics are about 16 per cent of those operated or 4 per cent of those seen, living at the end of three years, practically no one at the end of five years for the lower operation. The best statistics I know are probably those of 22.7 living at the end of three years as a result of the combined operation as compared with 4 per cent of the posterior operation.

The reason for doing such a severe type of operation is because more people live longer if they are operated in that way. Doctor Coffey has done a wonderful piece of work in working out the gauze and cigarette drain, and I am delighted to have heard Doctor Coffey again.

Dr. Strachauer: It is a pleasure to bear testimony to the great value of Dr. Coffey's contribution to the surgery of the rectum. In my experience his operation, when indicated, is superior to any procedure thus far devised. My partner, Dr. James A. Johnson, and I have performed twenty-two Coffey operations. My first nine were without a death. It was my misfortune not to have become acquainted with the Coffey technic until a few years ago, up to which time I dreaded the responsibility of cases of cancer of the rectum. Now I find satisfaction in operating upon them.

The work of W. E. Miles, of England, his studies of the natural history and pathology of cancer of the rectum, and Dr. Coffey's technical developments are, in my opinion, the two outstanding contributions of recent years.

A knowledge of the pathology of the spread of cancer of the rectum is absolutely fundamental to the carrying out of a properly planned attack on cancer in this field. If as a profession we are agreed on the necessity for removal of the axillary and cervical lymph nodes in carcinoma of the breast and lip respectively, why have we forgotten the identical importance of the regional lymph nodes in cases of cancer of the rectum? The consideration in the past has been how far above and below the cancer in the bowel we should go. While this is important in cancer of the rectum, the removal of the mesenteric and regional lymph nodes, the levator ani muscles and the lymph nodes in association with the ischiorectal fossa and in the hollow of the sacrum are equally important factors in obtaining the best results.

Technically the Coffey operation as compared to the Kraske types is comparable to abdominal hysterectomy as compared to the vaginal route. In one the operation is performed through adequate exposure with ample opportunity to see what is being done and ability to attack the circulation at its source. In the other the operation is performed in the dark. The toilet of the peritoneal cavity is as complete and thorough after the Coffey operation as following an abdominal hysterectomy. Raw surfaces are covered with peritoneum and the peritoneal cavity itself is closed and separated from the field of septic contamination. Hemorrhage, the equivalent of shock, and sepsis are avoided. Hemorrhage prepares the soil for pneumonia and sepsis. These are the two factors most responsible for the morbidity and mortality in the other types of operation.

The technic of the artificial anus is extremely important. I have insisted upon providing what I term a saxophone pouch or reservoir for the accumulation of feces below the level of the exit. This is easily devised in cases having an ample sigmoid. In the absence of the latter the descending colon should be mobilized and brought down. When such a pouch is provided these patients have very little more difficulty with their bowels than the normal individual; the bowels move once or twice daily and that is all. I have patients with this type of colostomy engaged in various occupations. One such patient rides horseback and plays golf.

Radium, even with the recent imbedding technic with gold tubes containing the emanation, while not causing the pain and proctitis that the topical forms of application do, has only a palliative value.

With the wide excision of bowel and the removal of the regional lymph nodes the operation stands firmly on a scientific basis.

Since it is well known that cancer in this field remains for a long time a local disease, by the increased employment of this operation we should be able to look forward to a new and brighter chapter in surgery of cancer of the rectum.

Dr. James A. Johnson: It has been a great privilege for me to listen to Dr. Coffey's paper and hear several points in regard to technic that I was anxious to have cleared up. Dr. Coffey has so thoroughly discussed every phase of the operation that it has been a great satisfaction to me.

The great advantage of the Coffey operation is that it provides for thorough removal of all the regional glands. There is a complete block of the lymphatics during the first stage.

It has been my experience that these patients have received a more satisfactory colostomy. Dr. Strachauer spoke of producing a pouch for the feces to rest in before being expelled. I have followed this same procedure and am sure it leaves a firmer stool and less external soiling.

The operation is a severe one and I am glad that Dr. Coffey impressed us so thoroughly with the fact that it must be done in two stages. Most of these cases occur in older people and they are not able to withstand the shock of a one-stage operation.

There is one thing that must be kept in mind and that is, when a cancer is located at or near the mucocutaneous margin of the anus the inguinal glands must be dissected out, because lesions in that locality drain directly into them.

I am delighted to have had the opportunity to listen to Dr. Coffey's splendid presentation.

SODIUM BROMIDE INTRAVENOUSLY

Sodium bromide may be injected intravenously, provided the liability of such an injection causing colloidoclastic shock is reckoned with. It seems, however, that mere "gastric distress" would call for better dilution of the dose given by mouth, as with a tumblerful of milk, or for introduction by way of the rectum, rather than intravenous injection. (Jour. A. M. A. Jan. 8, 1927, p. 120.)

THE MORE COMMON RECTAL COMPLICATIONS OF PREGNANCY*

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Minneapolis

Considering the course of pregnancy with the attendant engorgement of all the pelvic vessels and the pressure of the gravid uterus, it is little wonder that rectal affections are among its most frequent complications. While in themselves these conditions are usually not serious enough to threaten the life of the patient, still they are very painful and may be the cause of onset of serious complications. I have frequently had women tell me that pains of labor were nothing when compared to the pain caused by complicating hemorrhoids or fissure. Under these conditions it would seem that the patient is fully justified in asking that, if possible, she be spared this added suffering. At the present time I fear that too many medical men are inclined to make light of these troubles, forgetting that occasionally the side show may prove more interesting than the main circus.

Any factor which retards the flow of blood from the rectum causes a dilation of the hemorrhoidal vessels and renders the region more susceptible to trauma. This engorgement also renders the folds of the rectum more pronounced and hence the crypts of Morgagni deeper. In this condition they retain foreign particles more easily and are more likely to become infected. Constipation is also a frequent condition and the passage of hard stools over this engorged tissue easily abrades and injures it.

Rectal conditions in pregnancy fall into two classes: those which can be relieved by medical measures and those which demand operation. Moderate hemorrhoids without complications can usually be carried to term of pregnancy without operation. This is also true of fissure and fistula. On the other hand prolapsed and gangrenous hemorrhoids or perirectal abscess demand immediate operation. Palliative or expectant treatment in these conditions is more dangerous than operation. In addition to these groups where the issue is clearly cut there is a third group of doubtful cases in which the physician must decide whether surgery or medicine is indicated.

The most important consideration in the nonoperative procedure is the regulation of the bowels. Either constipation or diarrhea is almost sure to produce trouble. One hard stool causing severe straining may abrade the hemorrhoids, bring them down so they cannot be replaced or produce thrombosis. In fissure it is likely to produce severe pain and spasm which will persist. The patient should be warned to never strain at the stool. If the bowels do not move easily an enema of olive oil and warm water may be taken. The enema habit is not a good one but it is much better in pregnancy than the straining incident to a hard constipated stool. If the patient is habitually constipated liquid petrolatum by mouth is indicated. Sufficient doses should be given to produce one or two movements in twenty-four hours. This should be continued throughout pregnancy and post-partum. After bowel movements the patient should lie down an hour or two with the foot of the bed elevated. She should also be warned against being on her feet too much, long auto rides, lifting, stooping or any undue exercise. Diarrhea is as vicious as constipation, so drastic cathartics should be avoided. In case diarrhea develops from unforeseen causes it should be checked at once. Bismuth subcarbonate and tincture of camphorated opium will quickly do this in most cases.

In considering operative procedure there are a number of things to bear in mind. If the patient's history and examination indicate a normal course of pregnancy, operation in the first few weeks may be freely advised. On the other hand, if the patient gives the history of previous miscarriage or systemic disease, or if the history of the present pregnancy indicates a tendency toward miscarriage, operation should be avoided if possible. This is true regardless of the stage of pregnancy. If, however, the rectal condition is one which will likely grow more serious as pregnancy advances, then, even in the presence of a somewhat questionable history or physical findings, operation should be seriously considered. In the case of hemorrhoids, treatment by interstitial injection can be done. It is better to take the slight chance at this time than to be confronted with a greater one a few months later. Patients seen in the later months of pregnancy should be told that there is added danger and advised where possible to postpone more radical treatment until after childbirth.

*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, Oct. 18, 1926.

There are of course a certain group of cases in which operation is a necessity, regardless of the possibility of complications. The most common of these are perirectal abscess and strangulated and necrotic hemorrhoids. These should be operated and the sooner the better. Delay only increases the chance of more serious conditions arising. I recall two cases of thrombotic and necrotic hemorrhoids in women within two weeks of term which were operated upon without mishap under local anesthesia. I believe that local anesthesia is the anesthetic of choice in all rectal cases operated during pregnancy. While as a matter of principle I endeavor to avoid operative procedure during the later months of pregnancy I wish to go on record as believing that in normal pregnancy the ordinary rectal conditions may be operated with comparatively little danger at almost any stage of pregnancy.

In the case of hemorrhoids of the prolapsing internal variety I believe they are best dealt with by the interstitial injection of 5 per cent quinine urea hydrochloride. As previously stated I prefer not to inject cases which have passed beyond the fifth month. Nevertheless if pain, bleeding and other symptoms are severe enough I inject them regardless of how far pregnancy has advanced. As a matter of fact usually the cases which are going to have severe trouble will have enough indication by the fifth month so that they will present themselves for treatment before that time. So far I have had no mishap from injection at any stage of pregnancy, although of course those done in the last stages of pregnancy have been too few in number to draw definite conclusions. Occasionally a case is hard to decide. I recall a patient which I saw with one of our obstetricians, who had passed her sixth month. She gave a history of two previous miscarriages and had had one or two showings of blood during the present pregnancy. The hemorrhoids protruded every time she walked and with every defecation. The pain was very severe for an hour or two afterwards. Rest in bed did not relieve this condition as they protruded as soon as she was on her feet. Frankly, I would have preferred to dodge the issue in this case but she insisted on having some relief and after acquainting the family and patient with the possibilities we decided to inject the hemorrhoids with quinine urea hydrochloride. Two injections were sufficient to shrink the hemorrhoids so that they did not protrude and she passed the remainder of her pregnancy in perfect comfort, in so far as the rectum was concerned. I mention this case because I believe this type of treatment is more simple, less dangerous than the usual operative procedure and that its more widespread use is desirable.

There is another group of cases which I think may properly be included in this paper and that is the post-partum patients. Many patients who go through pregnancy successfully develop trouble due to the strain of labor. The two most common conditions are prolapsed and thrombotic hemorrhoids and fissure. The hemorrhoids usually occur during labor. In the case of prolapsed hemorrhoids replacement above the anal sphincter will usually give relief, provided they will remain in that position. Thrombotic hemorrhoids, if small, may be treated by local application, but if they are large enough so that the clot ulcerates through they should be operated at once. A ragged sloughing wound with undermined edges is more dangerous than a proper surgical one.

The other condition is fissure. This is usually caused by the habit of confining the bowels two or three days after confinement and then relying on an enema to remove the accumulation. The enema tip in the hands of an inexperienced nurse or the passage of a few rock-like masses of stool over the already engorged and tender rectal and anal tissues frequently produces a fissure. I have always contended that the routine administration of liquid petrolatum, beginning immediately after delivery, would prevent most of these cases. One obstetrician of my acquaintance has adopted it and now, instead of having ten or twelve cases of fissure a year from him, I see one or two. In post-partum cases it is well to let a month elapse before operation, but where necessary, operation may be done at any time.

In conclusion I may say—

1. The majority of cases, if seen before some acute attack, may be carried through their pregnancy by the ordinary precautions mentioned in this paper.

2. In the early weeks of normal pregnancy there is little danger in the ordinary rectal operations. Operation may be freely advised.

3. Operation in the later months of pregnancy also seems reasonably safe, but where pos-

sible, it is better postponed until after the termination of the pregnancy.

4. In certain acute conditions operative procedure should be advised at once and without hesitation, as delays and palliative measures are more dangerous than the operation.

5. In cases of internal hemorrhoids the use of interstitial injections of quinine urea hydrochloride is less disturbing than operation and usually as effective.

DISCUSSION

Dr. Louis A. Buie (Rochester, Minn.)—Rectal complications occurring during pregnancy cause extreme discomfort and at times are serious enough to demand surgical attention. Whenever possible, operative measures should be avoided during the two months previous to the onset of labor for two reasons:

1. Some form of anesthesia is necessary, local or regional preferred, and this, with the necessity of cleansing enemas as a part of the program of postoperative care of the wound, may terminate the pregnancy.

2. It is probable that new distortions will be caused during labor which will necessitate a second rectal operation. Besides, if the rectal wound is not entirely healed at the onset of labor, obvious difficulties will arise.

During the earlier months of pregnancy, rectal complications may be cared for almost as freely as if the patient were otherwise normal, but such difficulties do not usually arise until two or three months before term.

Palliation is the best procedure whenever possible. Dr. Fansler has stressed the importance of regulating bowel habits and the intelligent use of laxatives and enemas. He has advocated quinine urea hydrochloride injection and recommended its more widespread use. I am opposed to the employment of this measure by those who have not had experience with it. In the last month I have seen three patients who required extensive resections and even colostomy, because of stricture and distortion following such injections. Dr. Fansler's success with this treatment is due to his experience and such methods should be used only by those who are experienced.

SPENGLER TREATMENT OF TUBERCULOSIS

The Spengler immune blood treatment of tuberculosis is a method based on the principle of passive immunization. In 1908, Carl Spengler announced his theory that red blood cells play an important part in immunity to tuberculosis, immune substances being contained within the stroma of the erythrocytes of the resistant animal. He reported favorable results with his preparation, "Spengler's I. K." The method has had only small support. From the published reviews it may be concluded that the method is not of value. (Jour. A. M. A., Feb. 5, 1927, p. 425.)

THE NATURE OF THE GLOSSITIS IN PERNICIOUS ANEMIA*

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and
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One of us (J. P. S.) has had during the past twelve years opportunity to study four hundred and fifty patients ill with this fatal type of anemia. A majority of these patients were under close observation for several years, not a few for four or five years, two as long as ten years. During this period he has published certain studies.[1, 2, 3, 4, 5] Associates[6, 7, 8, 9] have covered other aspects. Not until 1925 was it felt that sufficient fundamental work had been done by the workers in general interested in the hemolytic diseases to warrant study of the most tantalizing of all the features of pernicious anemia, namely, the question of etiology.

Since glossitis is so prominent a phenomenon occurring at some stage of the disease in at least eighty per cent of all cases, since it is so frequently an early and forerunning symptom, and since it is under direct observation in its active as well as its atrophic stage, it occurred to us to give it some study.

It was while making a survey of the literature from the period of Addison, 1855, to Ehrlich in 1900 that one of us came across a copy of "Severest Anemias" by William Hunter, published in 1909.[10] Not only does this unique volume contain a complete bibliography from 1822 to 1902, inclusive, but also most excellent plates of the post-mortem tongue and other gastrointestinal lesions. His observations in 1903 established the following facts;

1. A total reduction in the size of the tongue, often to 60 and 50 per cent of normal. That this volume shrinkage was accounted for not only by atrophy of mucosa and submucosa, but by lessened muscle volume.

2. That the gross visible evidence of inflammation during life was obscured by the anemia, that redness and swelling occurred with diminishing vigor and intensity as the anemia progressed, and that preparation of the gross specimen in Keiserling's fluid revealed strikingly both the active and atrophic features.

*From the Medical Division, Nicollet Clinic, Minneapolis. Read before the Southern Minnesota Medical Association, Mankato, Oct. 18, 1926, and the Ramsey County Medical Society, St. Paul, Jan. 13, 1927.

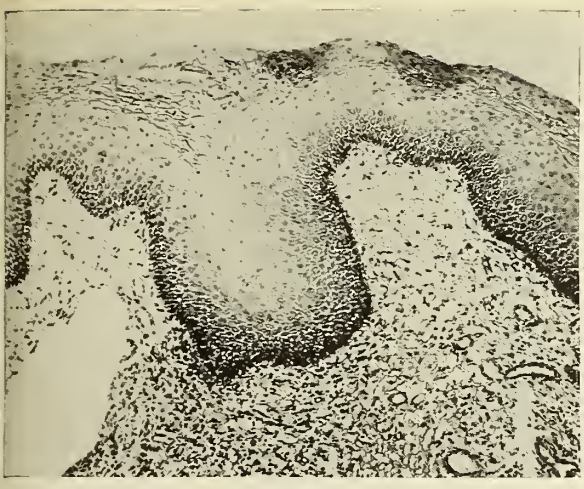

Fig. 1. Normal tongue, mucosa and submucosa.

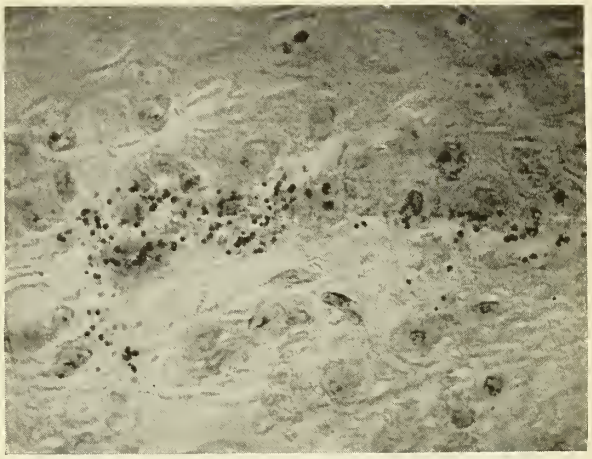

Fig. 2. Specimen of tongue from man aged fifty, clinically a typical case of pernicious anemia with cord involvement, who died on the neurological service of the Minneapolis General Hospital. The autopsy confirmed the diagnosis. Section stained with Gram-Weigert shows the presence of cocci as detailed by Hunter lying between mucosa and submucosa.

3. That histologic study of sections of tongue show mucosal lesions of all degrees of severity, from papillitis to necrosis and atrophy. That in the neighborhood of the active lesions there is small-celled exudation, and proliferation in the tissues and in the walls of the vessels.

4. That the mucosa and submucosa harbor streptococci "staining badly with Gram's."

In justice to Hunter it is proper that we quote a statement he made in 1900, to wit, "The glossitis is not producible by ordinary oral sepsis, however severe that may be, but once contracted, it is greatly aggravated by such sepsis." Instead of having maintained, as he is so frequently accused of maintaining by writers and speakers, that abscessed teeth, pyorrhea alveolaris and "oral sepsis" caused the anemia, he sharply differentiated the fundamental unknown factor from the obvious foci as we speak of them now, and also elsewhere as late as 1922[11] he again emphasized the total dissimilarity between a hemolytic anemia and a septic anemia.

Hunter's observations on the tongue done on post-mortem material met with the criticism that, while he demonstrated a streptococcic invasion of the tissues, this is not necessarily living pathology; the coccic invasion might be a terminal phenomenon and the actual changes occurring during the life of the patient might be due to a variety of causes, to wit: (1) the anemia per se; (2) an unknown toxic product eliminated into the mouth in the saliva; (3) neuro-trophic.

In view of these objections to study of the pathology and bacteriology of the tongue lesions in the dead and, I might add, of which studies

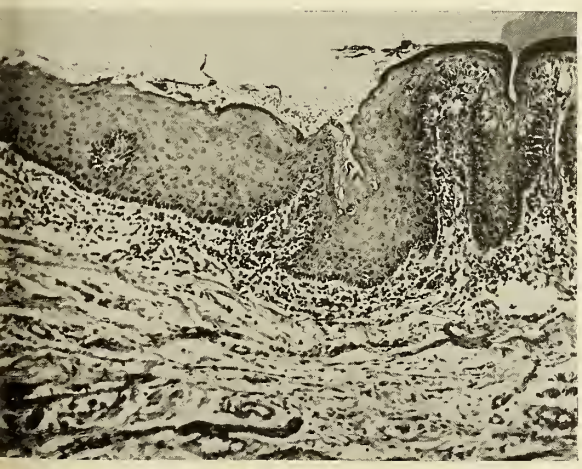

Fig. 3. Case 1. Low power view of section through acute glossitic area. Note mucous membrane desquamation, cloudy swelling and small round cell infiltration of submucosa.

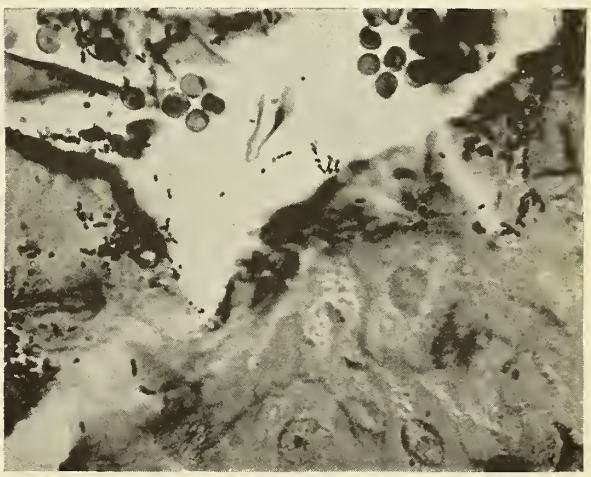

Fig. 4. Case 1. High power. Note streptococci in mucosa, in an area of destruction.

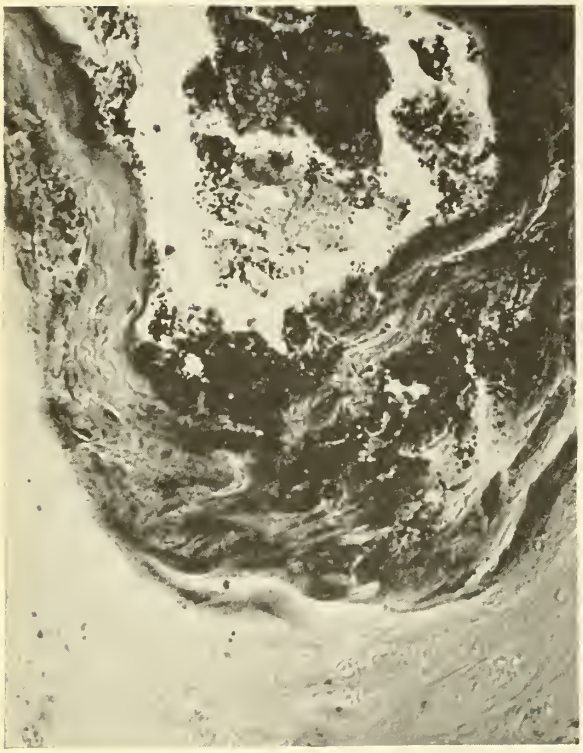

Fig. 5. Case 1. Low power. Mucosa almost totally destroyed with necrotic plug lying between papillae.

Fig. 6. Case 1. Low power. Base of area shown in Figure 5 with submucosa for orientation.

and objections a certain recent worker[12] is apparently unaware, we began in December, 1925, to investigate the glossitic lesions by the biopsy method. So far as our search of the literature reveals, there is no prior record of biopsy study of these lesions.

The following technic is employed:

Patients are selected who present red, rough, painful glossitic areas on the margin of the tongue. In the operating room with complete surgical asepsis the surgeon anesthetizes the area selected with 1 per cent novocaine and adrenalin, using care not to penetrate the biopsy section with the needle. An assistant holds the tongue outside of the oral space as far as possible with comfort. Surface sterilization is produced by the repeated swabbing and application of 95 per cent alcohol for fifteen minutes. So far we have found this to be the best agent to use. Iodine penetrates the total specimen after removal and inhibits growth of the organisms. A wedge of tongue a half centimeter wide and a centimeter deep is removed and transferred to a sterile container. The cut area is approximated with fine catgut sutures and heals kindly without untoward symptoms in five days to a week. The bacteriological work is done by Dr. Winford P. Larsen, the biopsy specimen being sent labelled by number only.

Case 1.—Pernicious Anemia. Mr. E. O., a farmer, aged 47, was first seen January 4, 1926, complaining of dryness of mouth and sore tongue. The family history was negative, and the past history uneventful. The soreness of the tongue was first noted about January 1925, accompanied by dryness of the mouth and substernal soreness on swallowing. The trouble developed slowly but progressively until the present date. Lately he has tired easily with a tendency to drowsiness. He has lost about eight pounds in weight during this year. He has also noted transient numbness of the hands and feet. Examination was essentially negative except that the tongue showed patches of intense glossitis with a general atrophic appearance, and the spleen was just palpable on deep inspiration under the left costal margin. Neurological examination showed evidence of posterolateral sclerosis of slight degree. Urine was normal. Blood Wassermann was negative. Gastric secretory analysis after Ewald meal showed free HCl 0. Bile index was 2 to 3 and at the same time the urine contained a trace of urobilinogen. January 4, 1926: hemoglobin 79; r.b.c. 3,760,000; w.b.c. 7,000; index 1.0. Smears showed characteristic findings of pernicious anemia. Nine subsequent blood counts showed a gradual gain

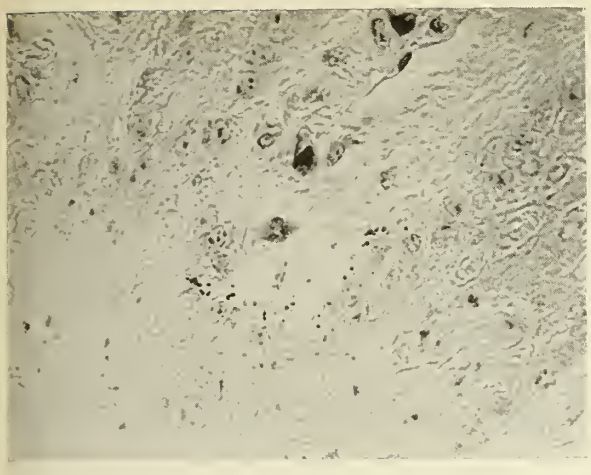

Fig. 7. Case 1. High power. Area of coccic invasion in lymphatics from area shown in Figure 6.

Fig. 8. Case 1. High power. Area of invasion of muscularis, just beneath submucosa.

until April 12, at which time the hemoglobin was 83; r.b.c. 4,180,000; index 1.0. Clinical notes during this period indicated that the glossitis varied markedly in degree at different times, being more severe at such times as the blood seemed to be improving and often diminishing rapidly in a given area by the time the blood had fallen. The onset of any attack frequently occurred with great abruptness. Specimens of the tongue were removed January 6, 1926, and January 22, 1926, and streptococcus viridans was recovered in pure culture from both specimens. The third specimen, removed February 26, was sectioned and stained with Gram-Weigert stain. (See Figures 3 to 9 inclusive.)

Case 2.—Pernicious Anemia. Mrs. A. H. P., aged 74, was first seen October 4, 1923, complaining of dyspnea, palpitation and weakness. The family history was negative. The past history revealed typhoid fever as a girl. Fifteen years ago a gastric achylia was found. Her present trouble began one year ago with a fainting spell, after which she began to notice edema of the legs, dyspnea, some discomfort in the left hypochondrium, increasing pallor and diarrhea. The examination was negative except that the tongue was moderately atrophic, but with no active glossitis, and there was edema of the legs. Urine was negative. Blood Wassermann was negative. Gastric secretory analysis after Ewald meal showed no free HCl. Stool was negative. Gastrointestinal tract was negative by roentgen examination. Hemoglobin was 77 per cent; r.b.c. 3,930,000; w.b.c. 8,250; index .98. The patient was placed upon routine management and was not seen again until January 13, 1926, when she came in complaining of weakness, dyspnea and some epigastric soreness. She stated that during July, August, and September of 1925 her tongue had been sore. Examination at this time showed the same smooth, atrophic tongue and, in addition, a patch of glossitis on the left edge, near the tip. The skin and sclera were definitely icteric. The sternum was tender and there was a soft systolic basal cardiac murmur. The liver was slightly enlarged and the edge of the spleen was indefinitely palpable at the costal margin. The edema of the legs was still present. Hemoglobin was 36 per cent; r.b.c. 1,790,000; w.b.c. 5,900; index 1.0. The smears showed typical morphological changes of pernicious anemia. The bile index was 9 to 10. There was a trace of bile in the urine and plus 1 urobilinogen. Subsequent blood counts have been confirmatory, namely, February 3, 1926; hemoglobin 58 per cent; r.b.c. 2,490,000; index 1.5; w.b.c 5,050. January 13, 1926, a specimen of the tongue was removed as described. The same organism as noted in the previous specimens was obtained.

Case 3.—Pernicious Anemia. Miss A. G., aged fifty-one years, was first seen November 6, 1925, complaining of stiffness in the hips and legs. The family history and past history were negative. In November, 1924, she began to notice paresthesia of the fingers and feet, and earlier during the year she remembers having had a sore tongue. General examination was in every way negative. Neurological examination showed evidence of a subacute combined sclerosis. The urine was negative. Gastric analysis after an Ewald meal showed free HCl 0. B. coli was recovered from the duodenal contents and the pigment values totalled 16,400 units. Hemoglobin was 69 per cent; r.b.c. 2,790,000; index 1.2; w.b.c. 4,200. Smears were characteristic for pernicious anemia. Clinical notes state that in December she had sore tongue and mouth which gradually became worse until January 26, 1926, at which time she had a typical glossitis involving one-third of the tongue with a red granular appearance. On this date, January 26, 1926, a specimen of the tongue was removed. A streptococcus viridans of the type previously reported was recovered in pure culture.

Case 4.—Carcinoma of the Stomach. Resection. Mrs. O. W., aged sixty-three years, was first seen February 18, 1924, complaining of stomach trouble. The family history was negative and the past history revealed typhoid fever at the age of twenty-seven years. One year ago she began to lose her appetite and to have distress in the epigastrium immediately after meals. She soon began to vomit her meals and finally could only take milk and raw eggs. She lost forty pounds

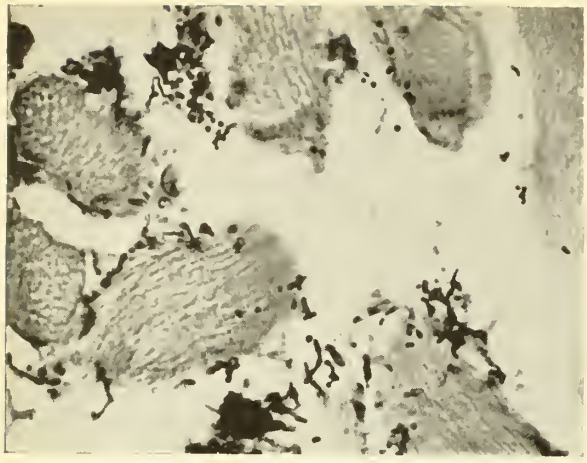

Fig. 9. Case 1. High power. Area of involvement in muscularis.

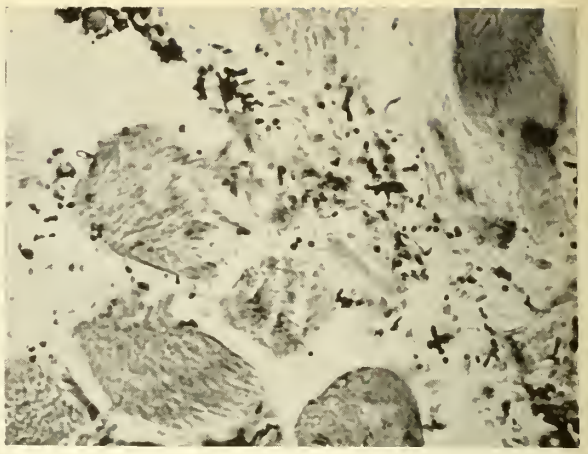

Fig. 10. Case 1. High power. Area of involvement in connective tissue of muscularis, near the under surface of tongue.

of weight in a year. General examination was negative except for cachexia, moderate arteriosclerosis and deep epigastric tenderness. Urine was negative. Blood Wassermann was negative. Hemoglobin was 70 per cent; r.b.c. 4,690,000; index .76. Gastric secretory analysis after Ewald meal showed free HCl 34, total acidity 55. The roentgen examination of the stomach showed a six-hour retention and an obstructive lesion at the prepyloric region which was diagnosed as carcinoma. At laparotomy on February 27, 1924, a large carcinoma extending from the pylorus up the lesser curvature about four inches was revealed. A Polya resection and anastomosis was performed. The postoperative course was uneventful. The patient was next seen two years later on February 16, 1926, when she complained of weakness, bloating and sore tongue. Examination at this time revealed a mild cachexia and a palpable tumor in the epigastrium which seemed to be the left lobe of the liver. Urine at this time showed plus 1 albumin and leucocytes. Bile index was 1 to 2. Urine showed a very faint trace of urobilinogen. Hemoglobin was 42 per cent; r.b.c. 3,320,000; w.b.c. 10,300; index .63. Smears showed many platelets and very few reticulated cells, a typical picture of secondary anemia. The patient was seen again March 19, 1926, at which time she complained of paresthesia of the finger tips of the left hand. At this visit the tongue was red with areas of glossitis, but no gross atrophy; instead, a large fissured tongue. The sclera were definitely jaundiced. Bile index was 2. Urine showed a faint trace of urobilinogen. Hemoglobin was 54 per cent; r.b.c. 3,240,000; index .84; w.b.c. 9,750. Smears were still characteristic of a moderately severe secondary anemia. A biopsy of the tongue was done March 23, 1926. No streptococci were found. The growth was abundant but a diplococcus of different type was present.

Case 5—Pernicious Anemia. Mr. P. J. J., a farmer, aged 43, was first seen April 26, 1926, complaining of weakness and gas on the stomach. The family history and past history were both negative. The patient has had a sore tongue and mouth for about five years, at intervals, and constantly since June, 1923. During this three-year period he has gradually become weaker, finally having to stop all hard work last summer. Recently he has had numbness of the hands and feet, spells of diarrhea, and at times dyspnea and palpitation. There has been no weight loss. Examination showed icterus of the skin and sclera, atrophy and general glossitis of the tongue, more noticeable on the edges. Neurological examination showed early moderate posterior-lateral sclerosis of the spinal cord. The urine showed a trace of urobilinogen. The stool was negative except for four plus urobilinogen and three plus urobilin. The blood Wassermann was negative. Hemoglobin was 35 per cent; r.b.c. 1,390,000; index 1.34; w.b.c. 7,200. The smears showed characteristic morphological changes of pernicious anemia, including nucleated red cells. The platelets were increased. Gastric secretory analysis after an Ewald meal showed free HCl 0. April 27, 1926, a biopsy was done on the tongue. The twenty-four hour culture showed streptococci but also a gram-negative bacillus which overgrew and made complete identification impossible.

Case 6.—Pernicious Anemia. Mr. N. H., aged 36, was first seen April 27, 1926, complaining of numbness of the hands and feet and distress in the epigastrium. The family history and past history were negative. In February, 1926, he first noticed weakness of the hand and fingers and, following that, paresthesia of the feet. Four months ago the mouth and tongue were sore and he thinks for several years past there have been spells of sore tongue, especially a period in December 1923. Dr. Murray's notes, at that time, record numerous small inflammatory lesions on the tongue, buccal membranes and pillars. The examination was normal except that the tongue showed a small patch of glossitis at the tip, without much atrophy. The neurological examination revealed evidence of early cord changes of posterior-lateral sclerosis. Urine was negative. Blood Wassermann was negative. Bile index was 5 to 6. Urine showed a trace of urobilinogen. Gastric secretory analysis after an Ewald meal showed a complete achylia. Blood volume index was

.77. Hemoglobin was 60 per cent; r.b.c. 2,200,000; index 1.36; w.b.c. 4,350; p.m.n. 42, lymphocytes 58. The smears showed typical findings of pernicious anemia. A specimen of tongue was removed April 27, 1926, from a red, fissured area at the tip, and streptococcus viridans in pure culture was obtained.

Case 7.—Cholecystitis and Cholelithiasis. Mrs. A. O. M., aged 58, was first seen January 20, 1926, complaining of pains in the right side of the abdomen. The family history was negative and the past history showed typhoid fever at the age of eighteen. Since Christmas she has also had pain in the epigastrium which radiates to the shoulder. It comes on by spells, irregularly, and emission of gas brings relief. She has to avoid meat and heavy foods. The examination was negative except for some resistance over the gallbladder and appendix. X-ray films of the gallbladder showed it only partially filled on fifteen-hour films, indicating disease. Otherwise gastrointestinal roentgenography was negative. Free hydrochloric acid was present in the stomach contents. Urine was negative. Blood examination: hemoglobin 80 per cent; r.b.c. 4,730,000;

Fig. 11. Case 6. Streptococcus viridans from twenty-four hour veal broth culture grown from tongue tissue of Case 6.

w.b.c. 7,200; index .85. When examined on August 27, 1926, she stated that she has had a sore tongue off and on for five or six years, on both sides, and a sore, red mouth, remaining for three to five days and as abruptly disappearing, to be free for weeks and months. More recently it has been sore on the right side. The right side of the tongue was painful and red, with thickened areas on the edges. The inner side of the lower lip and the floor of the mouth were very red and swollen. No induration. No desquamation. The spleen was not palpable. Diagnosis: Moeller's glossitis. A specimen was removed from the tongue for culture, which was negative, sterile.

Case 8.—Pernicious Anemia. Migraine. Old Mitral Stenosis. Mrs. E. J. M., aged 42, was first seen April 19, 1925, complaining of burning and distress in the epigastrium, pain behind the eyes and on one side of the face, and vomiting. The family history showed that the father and one brother had migraine headaches. The past history was negative except for rheumatism at the age of fourteen, of several weeks' duration, and a history of typical migraine since puberty. She has had a burning sensation in the epigastrium for one year and the bowels are loose by spells. Examination showed an old rheumatic mitral stenosis, well compensated. The tongue showed slight glossitis and atrophy. Blood examination September 7, 1926: hemoglobin 49 per cent; r.b.c. 3,160,000; color index .79. Previous examinations were essentially the same. Blood smears showed secondary anemia features. The urine was negative. Secretory stomach examination showed no free HCl. Secretory duodenal examination September 11, 1926, showed: color, black; urobilinogen 7,200; urobilin 6,800; bilirubin four plus. Neurological examination April 22, 1926, showed moderate impairment of vibratory sensation over toes and lower extremities, constituting early findings of posterolateral sclerosis of the spinal cord. A specimen of tongue was removed September 7, 1926, which showed a streptococcus of the viridans type in pure culture.

Case 9.—Epilepsy. Mr. G. L., single, aged 27, was first seen September 20, 1926, complaining of tenderness of the mouth. The family history was negative. The past history revealed numerous epileptic seizures. Since July 1926, the patient has had sore gums and mouth. He has been having treatments for "trench mouth," and has felt better. Examination was negative. Blood examination showed a hemoglobin of 87 per cent; r.b.c. 5,030,000; w.b.c. 9,750; p.m.n. 58; S. lymphocytes 34; L. mononuclears 5; eosinophiles 3. The color index was .87. On September 20, 1926, a specimen of the tongue was obtained which, on culture, was negative, sterile.

Case 10.—Ulcerative Colitis. Mr. R. H. P., single, aged 25, was first seen September 27, 1925, complaining of diarrhea. The family history and past history were negative. He has had periodic spells of looseness, alternating with constipation. There is some rectal soreness, but no blood or mucus in the stool. He has lost from five to ten pounds in weight. General physical examination was negative, except for a spastic type colon. Proctoscopic examination showed the usual colitis findings. The urine was negative. Blood examination was as follows: hemoglobin 75 per cent; r.b.c. 4,139,000; w.b.c. 15,900; p.m.n. 74 per cent; small lymphocytes 17; large mononuclears 7; eosinophiles 1; basophiles 1. Three stool specimens were negative for parasites, and cultures from the rectal wall showed only colon bacilli. Gastric secretory examination showed free HCl 88; total 100. The tongue was heavily coated, *but not reddened; i.e., no actual glossitis.* A specimen of the tongue was removed September 28, 1926, and cultured. The culture was negative for streptococci, but a bacillus was present which was not identified.

Case 11.—Pernicious Anemia. Mrs. A. McC., aged 37, was first seen October 5, 1926, complaining of numbness from the knees down in both legs. The family history and past history were negative. About eight years ago she began to notice numbness in both legs from the knees down. Lately she has been stag-

gering in her gait. Occasionally she has slight numbness in the fingers also. She has had attacks of sore tongue as far back as three years ago, but none for the past year. General examination showed only glossitis one plus, with atrophy three plus, and evidence of post-lateral sclerosis of the cord. The urine was negative. Wassermann blood examination was negative. Blood examination was as follows: hemoglobin 68 per cent; r.b.c. 2,520,000; index 1.3; w.b.c. 5,100; p.m.n. 41; lymphocytes 8; mononuclears 6; eosinophiles 2. Smears were typical for pernicious anemia. Gastric secretory examination showed free HCl 0. A specimen of the tongue was removed October 9, 1926, and cultured. Streptococcus viridans was present in pure culture.

Case 12.—Pernicious Anemia. Mr. C. O. R., aged 38, was first seen August 19, 1926, complaining of fatigue. The family history was negative. The past history was negative except for an attack of furunculosis one year ago, and sore tongue last spring, at which time he also remembers some stiffness of the legs. Examination was negative except for two areas of glossitis on the sides of the tongue, but only moderate atrophy. There was also an enlarged spleen. The blood count was: hemoglobin 73 per cent; r.b.c. 3,120,000; index 1.1; w.b.c. 4,950. The smears were characteristic of pernicious anemia. There was no free hydrochloric acid in the stomach. A specimen was taken through one of the glossitis areas on October 26, 1926, and a culture showed pure streptococcus viridans.

Case 13.—Arteriosclerosis. Mrs. J. W. H., aged 62, was first seen October 25, 1926, complaining of high blood pressure and an area of numbness in the left trunk. The family history and the past history were essentially negative. Her present illness dates from two years ago, during which time she has had a numb feeling in the left loin region which is not related to any gastrointestinal, cardiac, renal or pulmonary symptoms. She has also had a good deal of dizziness. Examination showed generalized arteriosclerotic changes with a blood pressure of 170/100 and normal urine. The neurological examination was negative for any organic lesion. The gastric analysis was normal and the Wassermann test was negative. She had a very mild non-specific papillitis of the tongue without atrophy. A specimen of the tongue was removed October 25, 1926, which on culture was sterile.

Progress Notes:

Case 1 has been seen many times since the above report was made and twelve blood studies made on these several occasions have all shown typical morphological pernicious anemia findings, with total counts about the same. The last count, January 7, 1927, showed: Hemoglobin 79 per cent and r.b.c. 3,320,000, with index 1.1. A neurological examination done on this same date showed a progression both subjectively and objectively of his cord involvement.

Case 8.—Blood examinations in this case done on several dates subsequent to above report have still shown a moderately severe anemia, with rather doubtful morphological characteristics. The last neurological examination on October 12, 1926, showed, however, a slight progression of the cord involvement; i.e., more definitely characteristic of pernicious anemia than previously noted.

Case 12.—This case was not seen since the above report until January 26, 1927, at which time his blood count was: Hemoglobin 78 per cent, r.b.c. 3,740,000, and index 1.0. The morphology was typical of pernicious anemia. The other six cases of pernicious anemia included in this study are all living, and are under observation.

DISCUSSION

It will be noted from Table I that in a total of nine biopsy specimens removed from eight patients ill with pernicious anemia, all yielded streptococcus viridans in pure culture except Cases 2 and 5, where accidental contamination prevented complete identification of one and a gram-negative bacillus was present from the onset in the other.

In the five controls, streptococci were absent in each instance. The normal tongue in the epileptic in the presence of marked gingivitis was sterile and the specimen in the patient with Moeller's glossitis (regarded by clinicians as a toxic manifestation) taken in an intensely red area was sterile. The large fissured tongue in carcinoma cachexia yielded a diplococcus and the heavily coated tongue in the patient with ulcerative colitis a bacillus not identified. This patient was selected to determine the possibility of complete surface sterilization in the presence of heavy surface growth of fungi.

It would appear that for the average conditions met in the glossitic inflammatory lesions, our technic gives reliable surface sterilization, and that the growth obtained is from organisms in the mucosa and submucosa as shown in the tissue sections.

Since the bacteriological study of the removed specimen is of the greater importance, no pathologic sections were made except in Case 1. From these sections it is evident at a glance that the invasion is an extensive and deep one, involving mucosa, submucosa and muscularis. In this same case one specimen was studied for monilia after the method of Ashford and for spirochetes by the usual technic without finding any of these organisms.

The regularity with which streptococcus viridans is found and its total absence in the controls suggests strongly that this organism is responsible for the glossitis lesions of the tongue during life.

TABLE I

Spec. No.	Case No.	Diagnosis	Tongue Findings		Bacteriological Report
1	1	Pernicious anemia	Glossitis 4	atrophy 1	Strep. viridans
2	1	Pernicious anemia	Glossitis 4	atrophy 1	Strep. viridans
3	2	Pernicious anemia	Glossitis 1	atrophy 2	Strep. not identified
4	3	Pernicious anemia	Glossitis 3	atrophy 1	Strep. viridans
5	4	Carcinoma gastrica	Glossitis 2	fissured	Diplococcus (definitely not strep.)
6	5	Pernicious anemia	Glossitis 2	atrophy 2	Strep. viridans plus a Gram. neg. organism
7	6	Pernicious anemia	Glossitis 1	atrophy 1	Strep. viridans
8	7	Moeller's glossitis	Glossitis 4	no atrophy	Sterile culture
9	8	Pernicious anemia	Glossitis 1	atrophy 2	Strep. viridans
10	9	Epilepsy	Normal		Sterile culture
11	10	Ulcerative colitis	Normal-coated		No. strep. Contaminating bacillus
12	11	Pernicious anemia	Glossitis 1	atrophy 2	Strep. viridans
13	12	Pernicious anemia	Glossitis 2	atrophy 1	Strep. viridans
14	13	Arteriosclerosis	Papillitis	no atrophy	Sterile

That the anemia per se does not act as a predisposing or favoring factor for the secondary invasion of the tongue is readily determined by the simple clinical observation that the tongue symptoms are antecedent to the anemia, as illustrated, for instance, in Case 6, where stomatitis and glossitis were noted in the patient's clinical record nearly three years before recognizable anemia developed. Furthermore, during the course of the anemia it is a recurring observation that a glossitis attack will precede for a week or ten days a drop in the blood values.

There is a wide discrepancy between the objective and subjective tongue findings. There may be little or no complaint with reference to the tongue and yet inspection will often reveal definite areas of active glossitis, particularly at one or the other margin, and much of the tongue will be extremely atrophic, indicating the effect of former glossitic attacks. There may be, as in Case 1, so much distress that the patient comes under care with glossitis as his chief complaint. It would appear from a study of the histology in this case that when the mucosa is destroyed to a degree allowing exposure of the submucosa, marked subjective symptoms result. When the glossitis objectively and grossly can be graded a 3 on the basis of 4, the patient will stress the tongue symptoms without direct inquiry.

In a good many instances a history of glossitic attacks must be sought months before the patient considered himself ill.

CONCLUSION

We have verified Hunter's clinical observations on the tongue phenomena in pernicious anemia. By applying the biopsy method of study to this organ we have made in the living the same histologic observations that he made in the dead, and have advanced the knowledge of the type of coccus responsible by bacteriological studies, demonstrating in nine specimens the uniform finding of a streptococcus of the viridans group. Having in mind his observations on the gastric and bowel mucosa, we find it difficult to get away from the assumption that they are also correct and to be accepted as occurring during the active life of the disease.

We are impressed with the possible etiological significance of these findings. Further studies with this organism and its toxins are in progress.

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EPHEDRINE

The Council on Pharmacy and Chemistry states that the reports which have been issued since its first report was published, warrant the acceptance of the drug for New and Non-official Remedies and the recognition of acceptable brands if the firms which market them will agree to be conservative in their claims. The Council report is accomplished by a report of the A. M. A. Chemical Laboratory on the establishment of standards for ephedrine hydrochloride and ephedrine sulphate. The Laboratory's report shows that the ephedrine hydrochloride of the Abbott Laboratories and of Burroughs, Wellcome & Co. meet the provisional standards, but that a pure sulphate has not yet been prepared. However, it appears that the study which is being made in the laboratories of Eli Lilly & Co., gives promise that a satisfactory product will shortly be available. The Council (1) endorsed the report of the A. M. A. Chemical Laboratory and provisionally adopted the submitted standards for ephedrine hydrochloride; (2) it admitted ephedrine to New and Non-official Remedies; (3) it voted to accept the ephedrine hydrochloride of the Abbott Laboratories when acceptable advertising is issued; (4) it voted to accept the ephedrine hydrochloride of Burroughs, Wellcome & Co. when it is marketed in the United States and acceptable advertising is issued; and (5) it voted to accept Ephedrine Sulphate-Lilly (formerly called "Fedrin") when the firm has achieved satisfactory standards and when the advertising is found acceptable. (Jour. A. M. A., Feb. 12, 1927, p. 482.)

PERIODIC HEALTH EXAMINATIONS*

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The campaign for periodic examinations of supposedly healthy persons is one of the medical profession's more recent advances in the field of preventive medicine. Physicians in general are convinced of the necessity of such examinations, and of the truth of Richard Cabot's statement, that we are indifferent healers but good teachers in the art of living correctly. Intelligent laymen throughout the country have enthusiastically supported the profession in this campaign, and a number of organizations, chiefly insurance companies, have been engaged in active propaganda and advertising in its behalf. The problem before medical organizations at present is chiefly to arouse the interest of individual physicians, in order that health examinations will be made in a thorough and uniform manner.

It is a matter of common knowledge that there has been a steady decline in the death rate during the last century, although death from cancer and the degenerative diseases is on the increase. This decrease in the general death rate has been largely due to a reduction in mortality during the earlier years of life. The average expectation of life at birth is about twenty years more than it was a century ago. Census figures from practically all countries show that the expectancy of life at forty and fifty has increased very little; that is, there has been no material extension of life past middle age.

It is of great importance to consider just how much of the average person's life is passed in a state of good health. Statistics in regard to morbidity rates are not convincing; it is, however, generally recognized that the total economic loss from preventable illnesses is great. Owing to the keen competition encountered in every industry, and the increasing complexity of modern life, the period of active and efficient work for each individual is limited. The working span of life of most professional men is reduced first by the long edu-

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cational period, and later by the early onset of the degenerative diseases. It is believed that health examinations will provide a method by which the death rate may be further reduced and the active working life of the individual lengthened; it is practically conceded that the great economic waste from preventable diseases would be materially reduced at the same time.

The experience of both Great Britain and the United States during the late war has emphasized the fact that the general population is far below attainable standards of physical excellence. The statistics prepared by the draft boards of both countries have been widely published and discussed, and need not be repeated in detail. In this country about 34 per cent of drafted men between the ages of twenty-one and thirty-one were found unfit for active military service. In Great Britain the rejection rate at eighteen years was 22 per cent, at twenty-three 48 per cent, and at forty-one 69 per cent. Many of the defects which incapacitate a man for military service do not render him unfit for active engagement in industry; on the other hand, the examinations of drafted men were necessarily lacking in certain details, and many men who were accepted were subsequently discharged on account of disabilities which existed at the time of enlistment. The somewhat more complete examinations conducted by the Life Extension Institute since 1914 include a group of more than 350,000 persons, and show a high percentage of physical defects, the actual figures varying considerably in different classes of population. It seems certain that from 40 to 60 per cent of all persons have some physical impairment of sufficient importance to warrant hygienic guidance, medical supervision, or treatment; more than half of these physical impairments are remediable entirely or in part.

During 1914 and 1915 a number of policy holders of the Metropolitan Life Insurance Company were examined. A large number of physical defects were found and advice given. Five years later those examined showed a death rate which was 28 per cent lower than had been expected. The anticipated death rate of those between fifty and sixty years of age was reduced 53 per cent. These figures constitute a powerful argument in favor of health examinations, and point clearly to the great reduction in mortality and morbidity rates which may be effected in this way. These figures are well known to the reading public and as a result there has been a great increase in the number of persons given annual medical examinations and advice.

The actual method of examination is, of course, a matter to be decided by the individual physician. It goes without saying that it should be systematic; a definite routine should be followed and complete records kept. The history in particular needs more attention than is usually given it, since careful questioning may bring to light symptoms of considerable moment. Specific inquiry should be made regarding the cardiovascular system, the gastro-intestinal tract, and so forth. The occupational status of the patient, his habits, social life, and recreation are also of the greatest importance. On account of the time and expense entailed, laboratory studies should be reduced to a minimum; they should, however, suit the needs of the individual. In general it may be said that they constitute the least important part of the work, a thorough history and physical examination with a urinalysis sufficing in most instances.

The following outline is a modification of that used at the Mayo Clinic, and has the merits of simplicity and thoroughness. Very little apparatus is required and the whole examination should not require more than an hour.

HISTORY

Age Sex Civil State Ancestry
Family history (noting familial tendencies to disease).
Previous diseases, injuries or operations.
Social history (occupation, and so forth).
Habits (including those of work, exercise, and so forth).
Marital history (in suitable cases).
Menstrual history (in suitable cases).
Present complaints (if any).
Physical examination:

1. Height, weight, and general appearance.
2. Structural defects, deformities, muscular development, and so forth.
3. Blood pressure, temperature and pulse (pulse before and after exercise).
4. Vision, pupillary reactions, and ophthalmoscopic examination, if practicable.

5. Nose, ears, oral cavity.
6. Neck (for goiter, lymph nodes, abnormal pulsation, and so forth).
7. Skin and appendages, lymph nodes, and so forth.
8. Lungs, heart, peripheral blood vessels, and abdomen.
9. Genitalia (including investigation for hernia).
10. Rectum and pelvis (in suitable cases).
11. Tendon reflexes, sensation, gait, and so forth.

Laboratory investigation:

Urinalysis.

Tallquist determination of hemoglobin.

Wassermann test (in selected cases).

Fluoroscopic examination of chest (in selected cases).

Further laboratory work as indicated in the individual case.

If the examination is to be made of maximal value to the patient, one must not concentrate all one's attention on an attempt to demonstrate pathologic changes. The proper functioning of the various systems must be borne in mind and deviations from the normal sought. In other words, the physician's major interest in these examinations should concern their physiologic rather than their pathologic significance. Lee has stated the exact purposes of health examinations in assigning to them a threefold object: "(1) the detection of organic pathologic changes, to be followed by the necessary measures for the correction, compensation, or control of the lesions discovered, as far as possible; (2) the detection of non-organic functional disturbances, to be followed by the necessary measures for the correction, compensation, or control of these disturbances, as far as possible; and (3) the evaluation and classification of each individual as an entity, to be followed by direction as to suitable future activities and by measures designed to better his classification and thereby improve his well-being and enlarge his potential activities."

The patient has only an academic interest in methods of examination, but is vitally concerned in the interpretation of the data obtained and the advice given. In short, he wishes to be told how to live properly, how to overcome his physical defects, and adjust himself to his disabilities. He also hopes to obtain information regarding the prevention of disease, particularly those conditions to which his occupation or habits may render him liable. In order to make these examinations of actual value to the patient we must consider not only his disabilities but the stresses and strains to which he is subjected in his particular environment. In this connection one must consider the general causes of disease, and wherein they may be operative in the individual case. The tabulation, a modification of one given by Fisk, is useful and may serve as a sort of yardstick to measure the hazards of any given patient.

TABULATION

Causes of disease

1. Heredity
2. Infections
3. Poisons
   a. Exogenous
   b. Endogenous
4. Food deficiencies and excesses
5. Neoplasms
6. Endocrine disturbances
   a. Hyperfunction
   b. Hypofunction
   c. Dysfunction
7. Physical trauma; physical apathy
8. Psychic trauma; psychic apathy.

In any large group of examinations one encounters certain types of patients who represent the extremes of biologic excellence and inferiority. The statement that all men are created equal is repeatedly contradicted in medicine; certain individuals reach a high stage of physical and psychic adaptability while others suffer from chronic inability to conform to their surroundings. The former are inclined to wear themselves out, and usually achieve success and physical disability coincidently; the latter often drag through a long listless and futile existence and rust out from disuse. Between the two extremes every gradation may be found. In health examinations these biologic types must be recognized and advice given, with full appreciation of what might be termed the natural history of such individuals.

There are a number of common problems which present themselves to one who makes a number of examinations on supposedly healthy persons. The illustrative cases presented here

are group pictures of cases taken from the Mayo Clinic files.*

Case 1.—C. H. Aged sixteen; male; high school student; American descent.

Family history: Negative.

Previous diseases: Always fairly well, scarlet fever at six, measles at five, tonsillectomy at twelve.

Habits: Sedentary; very little interest in athletics; leads his class in school. Does not use tobacco or drink coffee.

Complaints: None. Accompanied mother to Clinic. On questioning says that he tires easily and that his heart pounds on exertion.

Physical examination:

1. Height 5 feet 10 inches; weight 135 pounds.
2. Tall, slender lad, poor posture with stooped shoulders; muscular development fair.
3. Blood pressure 105 systolic and 70 diastolic; pulse 80, after exercise 110; temperature normal.
4. A few very small cervical lymph nodes; thyroid barely palpable.
5. Deflected nasal septum; vasomotor rhinitis; scarring right membrana tympani.
6. Narrow, flat chest; heart's apex 8 cm. from midsternal line; systolic murmur at apex, varying on change of position and not transmitted.
7. Right inguinal ring relaxed.

Laboratory examinations:

Urinalysis: Albumin, grade 2; no microscopic abnormalities.

Hemoglobin: 85 per cent.

Fluoroscopy of chest: Negative.

Comment: The principal points in Case 1 were the asthenia, poor posture, the cardiac murmur, and the albuminuria. On account of its variability the cardiac murmur was disregarded, especially since there was no history of cardiac disease, nor physical evidence of cardiac weakness. The albuminuria, on further examination, proved to be of the orthostatic type and related to the boy's poor posture and extreme lumbar lordosis. The parents were advised that the boy was underweight, underdeveloped and in need of systematic exercise and a general hardening process. After a year in a military school, with a vacation at a boys' camp, he had gained 18 pounds, the posture had improved greatly, the albuminuria had disappeared, and the cardiac murmur was audible only after vigorous exercise.

Albuminuria of variable degree occurs in about 5 per cent of the total population and in nearly 35 per cent of patients at the Mayo Clinic. Orthostatic albuminuria, while not of common occurrence, is not infrequently encountered. There is no reason to believe that it causes harm to the patient, although the question of loss of protein through the kidney must be considered as a possible cause of the asthenia of which these patients complain. On this account a high protein diet has been advocated as a therapeutic measure. Recently the blood proteins have been studied in functional albuminuria and found to be within normal limits. In many instances a suitable corset to correct faulty posture will cause marked decrease in the albuminuria. The administration of an alkali will also cause the disappearance of albumin in many instances.

Case 2.—R. G. Aged thirty-one; male; real estate salesman working in Florida; Scotch-Irish descent.

Family history: Mother died from tuberculosis; father living and well.

Previous diseases: Influenza in 1918.

Marital history: Wife and two children living and well.

Habits: Addiction to tobacco, grade 3, to coffee, grade 2, and to alcohol to excess occasionally. Does a great deal of night work, and has heavy responsibilities. Plays a little golf; is rather proud of the fact that he has had no adequate vacation in two and a half years.

Complaints: None other than insomnia and irritability; occasional headaches. Came to the Clinic with his wife.

Physical examination:

1. Height 5 feet 8 inches; weight 150 pounds. Patient nervous and irritable throughout examination.
2. Muscular development and posture good.
3. Blood pressure 110 systolic and 75 diastolic; pulse 78, after exercise 98; temperature normal.
4. Tonsils contain plugs of cheesy material.
5. Vision 6/10 in both eyes; definite hyperopic astigmatism.
6. Left chest smaller than right and deficient in expansion; increased breath sounds at left apex.

Laboratory examinations:

Urinalysis: Negative.

Blood count: Normal.

Roentgenogram of chest: Old healed tuberculosis of upper portion of left lung.

Comment: This patient was in fair health at the time of his examination but he had two definite dangers with which to contend. The first and most important had to do with his occupation. He had been uncommonly successful at his work and was receiving a good salary. This was accomplished, however, by prolonged and continuous work of the "high pressure" variety. He had denied himself recreation and vacations, and put in longer hours to earn extra commissions. The late hours, alcohol, and tobacco were also incidental to his work. With a family history of tuberculosis and evidence of an old process in his chest, advice to lead a less strenuous existence was doubly important. The relation of eye strain to his headaches was explained and refraction advised.

The patient wrote six months later to say that he was working six hours a day, and earning fully as much as before. He had taken a month's vacation and was playing golf regularly. His general health had

*Only information of first importance and positive physical findings are given.

improved and the insomnia and irritability had disappeared.

Case 3.—Mrs. M. Aged forty-five; housewife; German descent.

Family history: Parents dead; one sister at the Clinic with papillary cystadenoma of ovary.

Previous diseases: Influenza in 1919; usual infectious diseases of childhood.

Marital history: Husband and four children living and well.

Menstrual history: Normal until last two years; since then moderate leukorrhea and slight increase in menstrual flow; no metrorrhagia.

Habits: Husband a farmer; patient works hard, with little opportunity for recreation.

Complaints: Wishes a physical examination principally because of fear of cancer. Chronically constipated; tired out much of the time.

Physical examination:

1. Height 5 feet 3 inches; weight 115 pounds.
2. Asthenic woman; looks older than forty-five.
3. Blood pressure 130 systolic and 80 diastolic; pulse 84; temperature normal.
4. Tonsils inflamed, grade 2; nothing expressed. One abscessed tooth with draining sinus at gum margin; three others devitalized.
5. Small adenoma of right lobe of thyroid.
6. Heart and lungs normal; no peripheral sclerosis.
7. Abdomen relaxed with diastasis recti; descending colon and right kidney palpable.
8. Moderate perineal relaxation. Cystocele, grade 2. Uterus one and one-half times normal size with small fibromyoma in fundus. Cervix transversely lacerated, with mild cystic cervicitis.

Laboratory examinations:

Urinalysis: Negative.

Blood Wassermann test: Negative.

Hemoglobin: 70 per cent. Erythrocytes: 3,800,000.

Comment: This patient presented three problems, the first and most important of which was her fear of cancer. This had been exaggerated by her sister's illness, and by the death of a friend from carcinoma of the stomach. Roentgenograms of the stomach and colon were made, principally to reassure the patient. The fibromyoma of the uterus and other pelvic abnormalities are worthy of attention. It was quite safe for her to forego treatment at the time, since she was at the menopause and might reasonably expect to be relieved of her few pelvic complaints once menstruation had ceased. She was advised to be reëxamined frequently and to return for treatment if there was any definite increase in menstrual flow or intermenstrual bleeding.

Dental sepsis present in this case was apparently causing no symptoms, but extraction of the infected teeth was advised as a prophylactic measure. A high-calorie, anticonstipation diet, rich in fat, was prescribed, and she was urged to reduce her domestic duties as much as possible.

Eighteen months later the patient reported that she had not menstruated for seven months and that her physician could detect no further enlargement of the uterus. She had gained 5 pounds in weight and the constipation was considerably improved.

Case 4.—R. R. S. Aged forty-eight; male; railroad executive; American descent.

Family history: Father died from apoplexy; mother died from diabetic gangrene.

Previous diseases: None of importance.

Marital history: Wife and one child living and well.

Habits: Strenuous life with many responsibilities; moderately addicted to alcohol and tobacco; plays a good deal of golf for considerable stakes; has regular vacations, usually spent fishing and hunting.

Complaints: None, save slight shortness of breath on exertion and vertigo occasionally.

Physical examination:

1. Height 5 feet 7 inches; weight 215 pounds; ruddy complexion; healthy appearance.
2. Moderate pes planus; slight fixation of the lumbar spine.
3. Blood pressure 160 systolic and 100 diastolic; pulse 90 with slight increase after exercise.
4. Definite evidence of arcus senilis; ophthalmoscopic examination shows mild fibrosis of the retinal arteries, of the hypertension type.
5. Two devitalized teeth; tonsils reddened and contain plugs.
6. Heart somewhat enlarged to the left; short systolic murmur over second right interspace; aortic second sound slightly accentuated; slight but definite peripheral arteriosclerosis; abdomen obese; descending colon palpable.
7. A few external hemorrhoids; prostate firm and slightly enlarged.

Laboratory examinations:

Urinalysis: Trace of albumin and rare hyaline casts.

Blood count: Normal.

Roentgenogram of chest: Negative.

Wassermann test: Negative.

Comment: This man represents a typical business executive showing the first evidences of cardiovascular renal disease. Dyspnea and vertigo even if slight are of great importance in such a case. He was advised to remain for complete investigation of cardiac and renal function, and incidentally he was given Osler's remarks to read on the advantages of a man having a trace of albumin and a few tube casts at the age of fifty. There were no significant findings on further examination; he was advised to reduce his activities 25 per cent, to take nine hours of regular sleep and a noonday rest, and to engage in somewhat less strenuous recreation. Frequent vacations were insisted on. An anticonstipation diet containing 1800 calories was ordered, and the devitalized teeth and tonsils removed as an additional safeguard.

When last seen he had reduced his weight 20 pounds, the systolic blood pressure was 140 and the diastolic 90; reëxamination of renal and cardiac function was negative. He is arranging his work in such a way as to give him further opportunity for relaxation, and states that he feels perfectly well.

Our most careful attention should be given to patients forty or more years of age, since it has

been stated that little or no progress has been made in the extension of life expectancy in this group. With cancer and the degenerative diseases on the increase, these older persons call for a painstaking examination as well as careful and detailed advice in regard to general hygiene. When degenerative disease is present, its recognition may mean ten more years of life to a patient. A great opportunity for study of the early symptoms and signs of cardiac, vascular and renal disease presents itself in these cases; carefully kept records of annual examinations may furnish much data of value, and etiologic factors of importance may be discovered. It has been said in objection to periodic health examinations that there is no way in which angina pectoris may be detected at an early stage, and that other degenerative diseases are almost as elusive. The attempt should be made, nevertheless, and these persons given the benefit of such knowledge as we have. Prophylaxis is, however, the important thing to be kept in mind. As Emerson says, our attack on the degenerative diseases is by definite reform of the individuals of today and by the education of the citizens of tomorrow.

The rôle of the endocrine glands in the maintenance of health has been made the subject of much speculation. Unfortunately, the fanciful side of this speculation has greatly overbalanced any serious work which has been done on the subject. Profound changes in the endocrines occur after forty. Just why the cessation of reproductive functions in both sexes is attended with so many disorders is one of the mysteries of medicine. The obesity which so frequently develops at this time is only one expression of widespread metabolic disturbance. The physician's task of prolonging life will be greatly facilitated by new developments in this field.

There is much evidence for the conception that senility in general, and degenerative change in the various organs in particular, are largely a matter of blood supply. Brown's excellent work on capillary measurements at the various decades of life is most instructive in this connection. Krogh has shown that the efficient contraction of a muscle depends, to some extent at least, on its capillary circulation, and that only sufficient capillaries are open at any one time to supply the necessary amount of blood. Wearn has found that this may be true of heart muscle as well. In other words, the reserve strength of organs may lie in the number and diameter of available capillaries. Growing old may well be largely a question of failing capillary or arteriolar blood supply.

Such work as this should be applied to our clinical management of older patients. The periodic health examination of the future may include capillary measurements, estimations of the rate and volume of blood flow, and other methods which are as yet confined to the laboratory. In the meantime clinical data are sadly lacking, especially in the earlier stage of vascular disease. Health examinations may thus be made of service to medical science as well as to the individual.

There is evidently increasing interest on the part of the public in matters of public and personal health. The medical profession can do much to increase this interest through the medium of periodic health examinations. The physician can on these occasions direct the patient's attention to the dangers of quackery and pseudoscience. He can advise the patient regarding the sources of authentic information on hygiene and so divert his reading from "Physical Culture" to "Hygeia." A few neurotic persons, overinformed regarding problems of health, will tax one's patience, but in return one will reach and assist in educating a large group of the people who would otherwise take no interest in the matters of hygiene. These examinations offer an opportunity to obtain a larger share of public confidence than has heretofore been enjoyed.

CLEARWATER'S RHEUMATIC TREATMENT

In the village of Hallowell, Maine, there has been conducted for some years a piece of mail-order quackery by one H. P. Clearwater, a man without medical training. Clearwater has a somewhat extensive line of nostrums, some of which are sold exclusively on the mail-order plan, while in the sale of others, Clearwater splits profits with drug stores. Clearwater's mail-order activities are mainly with his alleged cure for rheumatism, "Clearwater's Scientific Rheumatic Treatment." From an analysis made in the A. M. A. Chemical Laboratory it appears that the "treatment" consists of two kinds of laxative tablets, one of which has in addition: sodium iodide 1/3 grain and sodium carbonate 5 grains per tablet. (Jour. A. M. A. Dec. 18, 1926, p. 2112.)

OSTEITIS FIBROSA CYSTICA*
Report of a Case

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Osteitis Fibrosa Cystica was first described as a definite disease entity in 1891 by von Recklinghausen. His report included three cases of generalized bone involvement. Five years previously Hirschberg described the same condition, but he was under the impression that it was a form of osteomalacia.

Complete review of the literature in 1922 by Morton revealed sixty-three authentic cases of the generalized form of this disease. An additional case was reported by him at that time, and six other cases were reported by Sisk in 1925. The literature has not been reviewed recently so that the actual number now on record has not been determined.

The case herewith reported is of interest because it necessitates a very interesting differential diagnosis from osteitis deformans (Paget's Disease), and adds support to the correlation of the two diseases as advocated by Knaggs in 1925.

CASE REPORT

Miss E. D., white, aged 46, an office clerk, had had scarlet fever, measles, and diphtheria as a child. At the age of eighteen she had an attack of lobar pneumonia. She has always been strong and healthy, athletically inclined, and during her younger years was a gymnast. Her menstrual history had always been normal, and there is no evidence of endocrine disturbance.

On May 9, 1917, following the slight, sudden exertion of reaching for a child to prevent it from falling, her left forearm became limp and somewhat numb, with loss of function. There was pain only on twisting the arm. No previous abnormality of the arm had been noted. A roentgen plate at this time revealed a cystic area involving the distal two-thirds of the left ulna, with a transverse fracture through this area. Treatment at this time consisted of surgical exposure and curettement. A gelatinous substance with some fibrous tissue was removed, which the pathology department of the University of Minnesota reported as simple fibrous tissue with no evidence of malignancy.

The patient was able to resume her work as stenographer and typist in August, 1917, there being no disability. In October, 1921, roentgen examination revealed a recurrence of the cystic condition, and surgical interference was again deemed advisable, this consisting in radical curettement and the application of radium. Recovery was again uneventful but the arm was left weakened, so that she was forced to change her occupation to that of file clerk.

In January, 1922, roentgen examination of the arm accidentally included the left hand, and revealed a marked degree of rarefaction in the carpal bones, and a definite cystic condition of the fifth metacarpal.

In March, 1922, the patient sustained an injury to her right hip by falling. No fracture could be demonstrated at this time, but it was noted that the entire pelvis and the proximal ends of both femora showed marked bony change. Following this the patient remained in good health and continued in her work as file clerk. In addition she has been helping with the work in her home, has been doing canoeing, swimming, hiking and recently even some bowling. She has never felt any discomfort, muscle pains or abnormal fatigue following any of these exercises except with the bowling, when she occasionally noticed pain in the hip muscles.

March 24, 1926, the patient slipped while stepping out of a car. She fell to the ground and struck on her left buttock and left elbow. Roentgen examination revealed a fracture of the olecranon process, of the fifth left metacarpal bone, and a longitudinal fracture through the left wing of the sacrum.

The physical examination at this time revealed no important abnormalities except those associated with the fractures. There is no noticeable bowing of the lower extremities, and no deformities except the operative scars on the left forearm. Laboratory study has been negative except a faint trace of albumen in the urine.

The fracture of the olecranon process was treated by open reduction with good union resulting. After several weeks of rest in bed the patient was able to return to her position and to her other activities, but is following advice to refrain from muscular exertion.

Roentgenograms were made of practically the entire skeleton, with the following findings:

1. *Skull*—There is a large area of marked rarefaction occupying practically the entire left frontal region. The remainder of the skull shows diffuse areas of decreased density of lesser extent. There is no thickening of the skull, no abnormal enlargement of the circumference, no periosteal change.

2. *Vertebral Column*—The bodies of the thoracic and upper lumbar vertebræ present a striated appearance, a combination of condensation and rarefaction, with some slight evidence of compression of the bodies. The findings here would strongly simulate those of Paget's disease.

3. *Pelvis*—The entire pelvic girdle is involved with a dense network of striations, interspersed with areas of rarefaction, but no definite cyst formation. There is a moderate pressure deformity of the pelvis. The sacrum shows a longitudinal fracture through the region of the left intervertebral foramina, without separation or displacement.

4. *Lower Extremities*—The proximal halves of both femora have the same fibro-sclerotic appearance as the pelvis, with a marked widening of the diameter of the shaft, a marked thickening of the cortex, partial obliteration of the medullary cavity, but also definite areas

*Read before meeting of Minneapolis Clinical Association, Nov. 2, 1926.

Fig. 1. Skull, showing large area of rarefaction in frontal bone.

Fig. 2. Pelvis and femora, showing marked fibro-sclerosis.

of cyst formation. The greater trochanter of the right femur shows evidence of an old chip fracture, presumably dating to the injury in 1922. There is a slight degree of coxa vara, but no bowing deformity of the shaft. The remaining portions of the lower extremities are normal.

5. *Upper Extremities*—The left humerus shows a solitary ovoid cyst in its midportion, but otherwise is entirely normal. The left ulna in its proximal end shows marked rarefaction with fracture of the olecranon process. The shaft shows extensive destruction of its distal two-thirds, practically only a shell of it remaining. The earlier plates are available to show the primary condition. These show a unilocular rarefaction of the distal two-thirds of the ulna with marked thinning of the cortex and only slight fusiform expansion of the shaft. The early fracture is also shown. The left carpal and metacarpal bones show moderate osteoporosis, probably a result of disuse. The diameter of the fifth left metacarpal bone is almost double that of the normal, with extensive, honeycombed cystic degeneration, and marked thinning of the cortex. The right upper extremity shows no abnormality. The thorax is normal.

From these roentgen studies it appears that we are here dealing with a case which has certain characteristics of osteitis deformans or Paget's disease, combined with cystic phenomena and a clinical picture which tend to place it definitely into the disease entity of osteitis fibrosa cystica of the generalized type.

In his Hunterian lecture in 1925 before the Royal College of Surgeons, Knaggs makes a thorough analysis of osteitis deformans and its relation to osteitis fibrosa and osteomalacia. He found a close resemblance in their microscopic pathology, and considers their essential characteristics to be the same, any detectable difference being only a matter of degree. The exciting agent of all these diseases is a toxin of unknown origin, producing different effects

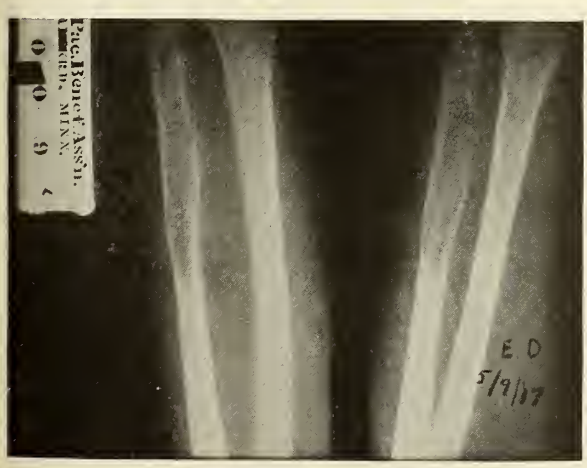

Fig. 3. Large cyst of left ulna, with pathologic fracture, the first clinical evidence of the systemic condition, May 9, 1917.

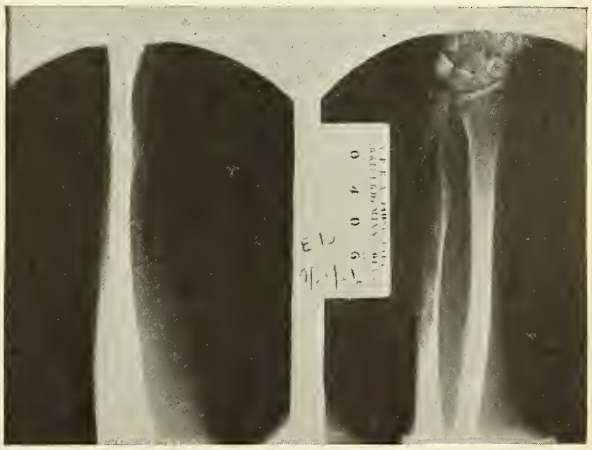

Fig. 4. Same as Figure 3, four years later, showing only moderate extension.

on the various constituents of the bone. The osseous framework or cortex is depressed and damaged beyond repair, while the connective tissue of the bone marrow is stimulated and changed into an actively growing, vascular connective tissue which invades the damaged cortex, breaks it up and absorbs it, and by laying down calcium in its own fibrils and cells produces a new bony framework. This process is a continuous one, with ossification predominating over resorption, especially in osteitis deformans. Certain features of this latter disease tend to show that it constitutes a less serious affection of the bones than in osteitis fibrosa, there being a greater ability of the bones to resist toxic influence. The relative intensity of this resistance can be roughly gauged by the extent and character of the reaction excited in the soft tissues of the affected bones. If the vitality is good, the resistance opposed to the toxins may ward off harmful effects until the constitutional strength is reduced by age and disease. The reaction under these circumstances is strong, and the resulting affection takes the form of osteitis deformans. On the other hand, if vitality is feeble, the disease appears earlier in childhood, adolescence, or early adult life. The reaction is fair, but not so vigorous as in osteitis deformans, and the form of the disease then assumes that of osteitis fibrosa. Lastly, when owing to the severe depression of the patient's vitality, usually by untoward circumstances, the power to react is absent, osteomalacia develops. This, in short, is Knaggs' argument, based on very thorough pathologic study. It is apparent that in it lies a solution for the difficulties which we meet in roentgenologic differentiation of these diseases. Witness the case herewith presented: The appearance of the pelvis in this case would lead one to the conclusion that this is a classical case of osteitis deformans; the appearance of the spine and the femora also would support such a conclusion, and one would ask for a roentgenogram of the skull merely to substantiate the diagnosis. This, however, presents no signs of the typical massive enlargement, the thickening of the cranial tables, or of the well-known "nigger-wool" appearance. In its place we have the single large area of rarefaction, and some diffuse rarefaction in the remainder of the skull. Then the cystic degeneration in the left arm and hand definitely brings the case into the cystica group. Apparently this patient has a fairly high resistance to whatever constitutes the etiological factor, since her condition did not become apparent until she was near the age period which we associate with Paget's disease. This would account for the fact that so many of her findings simulate this disease. It may be prognosticated that she will continue in comparatively good physical health until her resistance will be reduced by advancing age, with the result that she may gradually develop other pathological fractures, deformities of pelvis and lower extremities, and increasing general debility. It will be of interest to observe whether further bony changes will assume the nature of Paget's or of von Recklinghausen's disease.

Another case which I found in the records of the Minneapolis General Hospital shows a similar puzzling appearance. This was a male, aged 63, who was admitted to the hospital in a debilitated condition. The physical examination revealed a typical Paget's disease. In the roentgenographs the pelvis and some of the long bones show a marked cystic degeneration, while the skull shows the patchy sclerosis, the generalized enlargement, and the marked thickening of the cranial vault, appearances which we are accustomed to consider an absolutely diagnostic picture of Paget's disease. This patient died several weeks after he came under observation, from an intercurrent pneumonia, so that further observations are not available.

The association of the roentgenologic characteristics of these two diseases was also briefly commented on by Knaggs, and has been mentioned by other authors. The case herewith reported adds substantiation to the theory of their close relationship.

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THE EVOLUTION OF NEPHRITIS: ITS PROGNOSIS AND TREATMENT*

Part II

PROGNOSIS IN NEPHRITIS

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In speaking of prognosis in nephritis, the author of a well known textbook on the practice of medicine which was published ten or more years ago, made the statement that the nephritic patient either did better or worse than you expected him to do. This is equivalent to saying that it is difficult to make an accurate prognosis in nephritis. This statement was made prior to the advent of blood chemistry and renal function studies, but if it were necessary to limit oneself to the methods of examination employed twenty years ago, it would still be true. Moreover, the inference that an accurate prognosis in nephritis is easily made is as yet not justified, even with precise laboratory control.

Since there are several factors to be considered in prognosis in nephritis which must necessarily be discussed together, for the sake of clearness and easy reference I shall first enumerate them in the accompanying table:

ELEMENTS TO BE CONSIDERED IN THE PROGNOSIS OF NEPHRITIS

1. Presence and absence of edema.
2. Albuminuria.
3. The extent and activity of renal degeneration.
4. Blood pressure.
5. Phenolsulphonephthalein output.
6. Level of nitrogen retention.
7. Anemia.
8. Condition of the cardiovascular system.
9. Fundus changes.

The presence of edema, even if extensive, does not indicate a poor prognosis in acute nephritis. Under proper management the edema often disappears rapidly. Many nephritic patients with marked edema have surprisingly good and often entirely normal dye and nitrogen function. However, persistence of marked edema in subacute nephritis, especially in a well managed patient, means a severe renal lesion and does indicate an unfavorable outcome. A patient with marked edema does not always progress to and die of renal insufficiency, but he has a noteworthy lack of resistance to infection and often succumbs to intercurrent disease, particularly influenza, pneumonia and pneumococcus infection of the lung and serous cavities. Other infections, such as tonsillitis, infections of the throat, sinus infections, carbuncles, streptococcus and staphylococcus infections should receive the same serious consideration in nephritis as in diabetes. The progress of nephritis is often unduly hastened by the presence of these infections.

The disappearance of edema in subacute nephritis, as already mentioned in a previous article,[1] may even render the outlook more serious as it may disappear coincident with the appearance of renal insufficiency.

Prior to our present knowledge of kidney function, as revealed by functional tests, the estimate of the severity of nephritis was largely based on edema and the amount of albuminuria and persistence of casts in the urine. Now the presence of albuminuria has more of a diagnostic than a prognostic significance. To illustrate the pitfalls that one may be led into in judging the severity of nephritis by the albuminuria, I shall cite two widely contrasted cases from my experience. The first was seen in February 1922, and was reported at the meeting of the North Dakota State Medical Association at Grand Forks in June 1922. The other is one of my present cases. I have accurate notes of only the laboratory findings and blood pressure determination in the first case and must rely largely on memory for the history and physical examination.

Case 1.—Clinical History. The patient, an unmarried farmer forty-six years of age, was seen for the first time on February 17, 1922. There was no history of any serious illness. During the past six months his appetite and digestion had been poor and he had lost some weight. For the last three to four weeks he had increasing nervousness and insomnia, and was unable to do his farm work because of lack of strength and exhaustion. The last week or ten days he had cramping in the muscles of his legs and forearms at night.

Physical Examination. Except for the patient's being undernourished and having poor teeth with advanced pyorrhea, I have no recollection of the findings in the physical examination. The systolic blood pressure was 168, the diastolic 94. Chronic nephritis was suspected, and a phthalein test was done that day which showed 5 per cent the first hour and 0 per cent the second hour. Urine specimen showed specific

*From the Medical Division of the Nicollet Clinic, Minneapolis.

gravity 1007, albumin ±, a few white blood cells and no casts. The patient was advised to enter the hospital, which he did on February 21, 1922. The phthalein test was repeated on the day of admission, with 0 per cent in three hours.

On February 22 the patient was given the Mosenthal kidney test diet, which furnished the following data: the two hour day specimens showed variation in specific gravity from 1008 to 1010. The volume of the total day specimen was 1,405 c.c. The specific gravity of the night specimen was 1011 and the total volume of the night specimen was 1,125 c.c. The total twenty-four hour intake was 1,760 c.c. and the total twenty-four hour output 2,530 c.c. The patient therefore had a minus fluid balance of 770 c.c.

Fixation of secretion was also present and two hour specimens only varied in quantity from 210 to 256 c.c.

February 23, 1922. Urine, twenty-four hour specimen, 1,350 c.c., specific gravity 1006, albumin ± sediment negative.

February 24, 1922. Blood pressure 149/92. Urine, twenty-four hour specimen 750 c.c., specific gravity 1010, albumin ±.

February 25, 1922. Blood pressure 168/92. Urine, twenty-four hour specimen 1,500 c.c., specific gravity 1011, albumin ±, sediment negative.

February 27, 1922. Urine, twenty-four hour specimen 1,740 c.c., specific gravity 1010, albumin ±, sediment negative.

March 1, 1922. Blood pressure 164/94. Urine 1,440 c.c., specific gravity 1011, albumin ±, sediment negative.

March 2, 1922. For the last twenty-four hours the patient vomited everything, including water. Air hunger and picture of terminal acidosis were present.

March 3, 1922. For the last twenty-four hours the urine contained macroscopic and microscopic fresh blood. The patient was in coma and died at 8:00 A. M.

Comment. On February 23, 1922, on the basis of the two phthalein tests and the Mosenthal test, a grave prognosis was given to the patient's relatives. The absence of even a few hyaline casts and the presence of a very small amount of albumin in the urine was rather remarkable and may have been due in part to the fact that the patient was secreting an alkaline urine, which may have brought about a disappearance of the casts, but my present notes furnish no information on this point. The bloody urine shortly before exitus was most probably caused by extensive thrombosis in the glomerular and renal vascular supply. Even without autopsy findings, I believe that it is safe to assume that the patient died of renal insufficiency due to chronic nephritis. There was at no time anything to suggest prostatic obstruction.

Case 2.—The second case, offered by way of contrast, is as follows: the patient is a male student, thirty-two years of age. His present complaint is only that of albumin in the urine.

The family history shows that his father died of pulmonary tuberculosis at the age of fifty-seven. His mother died at the age of sixty-eight of hypertension and cardiac failure. One brother is living and has tuberculosis. Otherwise the family history is not noteworthy.

Present History. The patient was more or less a physical weakling up to the age of thirteen. He had a severe attack of measles at the age of seven. He was always subject to bronchial infections and in the winter of 1906-1907 he had severe diphtheria with a cardiac complication. Late in the fall of 1909 he was found to have albuminuria. His tonsils were removed in 1919 and he has had more sore throat since that time than before. He is a medical student and he therefore recognizes his abnormal kidney condition. He has always taken good care of himself.

The patient considers himself well, except that he has albuminuria and notices that he is more knocked out by any dissipation than a healthy man. Before beginning his University course, he worked as a male nurse and did not notice any unusual fatigue. He has had some headaches this fall and believes them due to faulty refraction. He has had no nausea, vomiting or edema. Nycturia is present only when he drinks fluids freely. He says that he has some pain in the chest following unusual exertion.

Physical Examination. The patient is a man of sthenic habitus, 66 inches tall, weighing 154.5 pounds. He is well nourished and his complexion is florid. His temperature is 98.0, his pulse 86 and his blood pressure 166/114. (The patient states that his usual blood pressure is about 155/110.) His eyes show beginning arcus senilis and are prominent. His teeth are all vital. His tonsils have been well removed. There are a few scattered râles in the lower right lung, but he has had a recent cold. Examination of the heart reveals supracardiac dullness 6 cm.; right border 3 cm.; apex and left border 10 cm. in fourth intercostal space. There is a diastolic murmur to left and right of the sternum. A_2 is accentuated. He has marked brachial and radial arteriosclerosis for his age. Fluoroscopic examination of the chest shows the lung fields to be normal except for increased density in hili. The aorta is moderately widened and tortuous. The heart shows moderate left ventricular hypertrophy ("wooden shoe" type). The fundus shows an extensive chorio-retinitis and because of this and a refractive error, examination of the retinal vessels was unsatisfactory.

Clinical laboratory examinations during the period that the patient was under observation showed the results tabulated in the accompanying table.

February 12, 1916. Phthalein 40 per cent in two hours ten minutes. Blood sugar .08 per cent. Blood urea nitrogen 13 mgm. per 100 c.c. Hemoglobin 89 per cent; red blood cells 5,160,000; white blood cells 7,550. Wassermann, negative (March 26, 1926).

The findings in this patient are so unusual that I believe they deserve to be placed on record. The outstanding feature is that so far as the patient knows, he has had constant albuminuria for seventeen years.

URINARY EXAMINATIONS

Date	Reaction	Sp. G.	Albumin	Sugar	Sediment
2/9/26	Acid	1016	++++	0	Rare white blood cells and red blood cells. Moderate number of hyaline casts with fine brown granules and few with fat globules.
2/12/26 Day 1,200 c.c.	Acid	1018	++++	0	Occasional white blood cells and red blood cells. Many hyaline casts with fine brown granules. Few brown granular and rare leucocytic casts.
Night 180 c.c.	Acid	1026	++++	Trace	Sediment same as above except brown granular casts more numerous.
2/20/26	Acid	1019	+++	0	Rare white blood cells. Numerous hyaline casts with fine brown granules.
3/25/26	Acid	1018	+++	0	Rare white blood cells. Numerous hyaline casts with fine brown granules. Rare brown granular and cellular casts.

He was fifteen years old at the time that it was discovered and knows that for several years repeated urine examinations showed albumin a constant finding. When about twenty years of age he took up the profession of nursing and during this period and throughout his medical course he examined his own urine and states that albumin was always present in a large amount. The constant albuminuria has not caused any impairment in health or physical efficiency. There is nothing about his appearance to suggest nephritis; on the contrary, he is the picture of health. Even with a constant loss of albumin, his blood picture has remained entirely normal.

The same quantity of albumin in both day and night specimens rules out any orthostatic element, as does also the sediment. The large amount of albumin with the preponderance of the one type of cast (hyaline with fine brown granules) and occasional fat droplets and almost complete absence of cellular elements indicate that the renal lesion is a nephrosis type. In this connection the absence of edema is rather remarkable.

The 40 per cent phthalein, while it is the lower limit of normal, is not entirely satisfactory, and, together with his hypertension, means some glomerular involvement with a tendency to slightly impaired renal function.

We expected to repeat this test in a few months, but the patient did not return for further observation.

Taking into consideration the outcome of the two cases just cited, it is apparent that it is dangerous to come to any prognostic conclusion based only on the presence of albumin in the nephritic patient. In addition to the last case cited, I have observed several other patients with marked constant albuminuria of three to five years' duration who still have normal renal function and who are able to follow their vocations without being seriously handicapped by their renal lesion. I am convinced, therefore, that a serious prognosis in nephritis should never be given on the presence of albumin alone.

The activity of the renal degeneration is also not an index to the outcome of nephritis. While the lesion is still active and abundant casts (especially the active types, cellular and brown granular) and cellular elements are present in the sediment, there is still a probability of cessation of the degenerative process with no impairment of renal function. It is also possible to have an active degenerative process with moderate reduction of renal function, with improvement in the latter as the degenerative process subsides. If we could see the kidney at this stage we should in all probability see it before secondary contraction or sclerosis has taken place, while a kidney in which the degenerative process has ceased and function shows marked impairment, is usually small, contracted and greatly sclerosed. Therefore, while abundant albumin and the acute degenerative types of casts are still present, there is still a possibility of eventual recovery if the renal function is only slightly impaired. I can perhaps bring this out more clearly by stating a hypothetical case. If a patient comes to you and you find the phthalein to be 20 per cent and the blood urea nitrogen 30 mgm., it is much better for the patient's future outlook to have abundant albumin, degenerative casts and cellular elements in his urine than to have a small amount of albumin and only a few or a moderate number of hyaline casts. These statements bring out a viewpoint which is a direct contradiction to the interpretation placed on urinary findings by many practitioners; but anyone who carefully follows through the course of a number of nephritis patients will be convinced of the truth and significance of these statements with regard to prognosis.

Very little need be said concerning blood pressure and prognosis in nephritis, except that a persistent and rising blood pressure indicates a grave outcome.

The phenolsulphonephthalein excretion and the level of nitrogen retention may be considered together in determining prognosis. We shall speak only of the blood urea nitrogen level in nitrogen retention. The use of the blood urea nitrogen and the non-protein nitrogen is largely a matter of choice.

The repeated determination of the phthalein output and the blood urea nitrogen in the blood plasma reveals a very close relationship. As the former comes down, the latter rises. This has already been more fully commented upon under Part I, "Renal Function and the Evolution of Nephritis." Experience supports the general statement that when the phthalein output is below 10 per cent and the blood urea nitrogen is in the 50's, it is unusual for the patient to outlive a period of one year. There are, however, numerous exceptions to this rule. O'Hare[2] reports two cases, one a woman who lived for three years with a phthalein that varied from 0 to 18 per cent with a blood urea nitrogen four to five times above the normal figure. About eight months before death she survived an attack of uremia in which the blood urea nitrogren reached 168 mgm. From that time on she lived with an 0 phthalein. A second case lived for a period of five years with a phthalein which was never above 14 per cent and which was unually closer to zero.

Blood creatinine has come in for considerable attention in the prognosis of nephritis. A blood creatinine value above 5 mg. is generally regarded as a bad prognostic sign.

Walker,[3] in analyzing the data of thirty-eight cases in the Medical Clinic of the Peter Bent Brigham Hospital, found that patients with high blood creatinine occasionally outlive their expectancy and that the clinical condition of the patient, together with the phthalein and blood urea nitrogen determinations, furnishes as much information as does creatinine. Christian and O'Hare[4] cite one case of acute nephritis with a blood creatinine of 19 mgm. which recovered.

My purpose in dwelling on these exceptional cases is to lay emphasis on the fact that great caution should be exercised in making laboratory prognosis too definite.

I shall not comment upon anemia in the prognosis of nephritis, except to mention that in acute nephritis with edema the patient may be exceedingly pale and yet have very little anemia In other words, the anemia is more apparent than real. In renal insufficiency, as Brown and Roth[5] have pointed out, the degree of anemia closely parallels nitrogen retention and a progressive anemia is a poor prognostic sign. Their analysis of cases at the Mayo Clinic shows that the mortality rate in patients with nephritis with renal insufficiency and moderate anemia (hemoglobin 50 to 70 per cent), within a period of two and a half years, was 46 per cent. In the group with severe anemia (hemoglobin below 50 per cent) the mortality rate was 85 per cent for the same period.

The anemia is due to decreased red blood cell production because of depression of the bone marrow by the retained toxic nitrogenous products. There may, however, be a nutritional element in it.

With reference to the cardiovascular system and prognosis, nothing more need be mentioned, except that many patients with chronic nephritis die of cerebral hemorrhage or cardiac defeat before they die of their nephritis. In this feature in prognosis it is a matter of conjecture and judgment as to how long the heart will hold out in the face of a diseased vascular system, the deleterious influence of the toxic substances on its myocardial muscle and the inadequate coronary blood supply.

So much first-hand information may be obtained by frequent eyeground examinations that anyone who follows with interest the vascular, cardiac and renal disorders should include the use of the ophthalmoscope in making physical examinations. In nephritis the fundi should be routinely examined every time the functional tests are repeated. I shall limit myself to only a few general statements concerning eyeground findings and prognosis.

The presence of bilateral papilloedema, retinal edema and albuminuric retinitis with marked sclerosis of the retinal vessels occurring in the course of chronic nephritis, is a finding of grave prognostic import. Patients showing these changes have an associated advanced vascular disease and usually die within a year. However, one case of chronic nephritis examined by Dr. O'Hare and myself, having an acute exacerba-

tion with a fairly extensive albuminuric retinitis consisting of "powdery" white spots, irregular "hard" white spots and partial fan formation, showed an almost complete disappearance of these spots nine months later. The fact that he was a badly managed nephritic patient when he came under our care and followed a well regulated regime during the nine months that he was under observation, may have had much to do with the clearing of his retinæ. When last seen by me, in June 1925, his renal condition was such as to still permit his living for several years.

If in addition to the findings enumerated above, the soft white or "cotton wool" spots occur in profusion, it usually means that a marked toxic element exists in the nephritis and under these conditions a serious and complete breakdown of renal function is imminent. In acute and subacute nephritis, marked eyeground changes are conspicuous by their absence; but when they are present they add serious aspect to the severity of the nephritis. As a word of caution to beginners in eyeground examinations, I wish to state that the fundus changes that have been discussed are not prima facie evidence that nephritis exists. The same changes may be produced by advanced vascular hypertension.

Hemorrhages, even when extensive, are more in the nature of accidental findings, and have no definite prognostic significance.

From the above discussion, it follows that the prognosis in nephritis is beset with uncertainties and there are many opportunities to fall into error and to make unguarded statements. All the features that the individual case presents must be carefully considered and evaluated before the clinician should permit himself to make any definite statement regarding the duration of life or the possible outcome in a case of nephritis.

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THE LEAD TREATMENT OF CANCER

At a recent meeting of the British Medical Association, a full summary of the results to date was presented by members of the staff of the Liverpool Medical Research Organization. The clinical survey indicates that there is promise of therapeutic benefit in a few selected cases of otherwise hopeless cancer. The preliminary task before treatment can be begun is the selection of patients who may possibly obtain benefit. The lead suspension which Blair Bell uses contains fairly fine particles, some of which are metallic lead, and some lead hydroxide and lead carbonate. The mixture is more toxic than pure colloidal lead but it is also more effective in the destruction of tumors. Commercial products are not as yet available, but several laboratories in this country and in England are experimenting with various preparations, hoping soon to be able to develop a standardized and reliable product. It seems that Blair Bell has shown that, when employed under cited limitations and by those who possess proper laboratory facilities and clinical experience, lead therapy offers to a small number of persons affected with inoperable tumors, a chance to escape the consequences of the disease. But before any widespread use can be made of the method, some means of removing lead from the body to control acute or chronic poisoning should be developed. The whole situation is thus frankly in the experimental stage. To carry out the treatment at all, requires hospitalization of the patient for some months, laboratory and clinical facilities not everywhere available and funds for frequent transfusions. It seems improbable that the method will ever replace surgery or compete with irradiation, but it has already accomplished something in patients in whom one or both of these procedures had failed. (Jour. A. M. A., Jan. 8, 1927, p. 103.)

PHYSICAL THERAPY AND PSEUDOPHYSICS

Much of the literature on physical therapy has apparently been written with an eye to the royalty statement or the publicity returns rather than to the possibility of scientific criticism. These treatises become impressive, in size, at least, by the inclusion of statements on the physics of the apparatus culled almost in toto from the advertising and descriptive matter published by a manufacturer. This practice might be commendable if the physical concepts were not often wholly at variance with the concepts generally accepted by physicists. The physician who desires a substantial knowledge of physical therapy must choose his sources of information carefully. (Jour. A. M. A. Jan. 15, 1927, p. 175.)

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ELI LILLY & COMPANY

Ricinoleated Antigen, Scarlet Fever, Immunizing-Lilly.

NATIONAL ANILINE & CHEMICAL COMPANY

Tablets Gentian Violet Medicinal-"National," 0.0324 Gm. (½ grain).

Enteric Coated Tablets Gentian Violet Medicinal-"National" 0.0324 Gm. (½ grain).

PARKE, DAVIS & COMPANY

Glaseptic Ampoules Sodium Cacodylate—P. D. & Co. (¾ to 15½ grains).

THE UNITED LAROATORIES.

Culture Bacillus Acidophilus-United Laboratories.

TRUTH ABOUT MEDICINES

Saf-T-Top Mercurochrome Solution.—An aqueous 2 per cent solution of mercurochrome—220 soluble (New and Non-official Remedies, 1926, p. 249) in ampules containing 2 c.c. and having a capillary opening. Robert A. Bernhard, Rochester, N. Y.

Bismuth Salicylate in Oil—P. D. & Co.—A suspension of bismuth salicylate U. S. P. (New and Non-official Remedies, 1926, p. 97) in a liquid composed of camphor, 10 per cent; creosote, 10 per cent; olive oil, 80 per cent. Each c.c. contains bismuth salicylate, 0.13 Gm. (2 grains). Parke, Davis & Co., Detroit.

Glaseptic Ampules Bismuth Salicylate in Oil—P. D. & Co., 1 c.c.—Each ampule contains 1 c.c. of a suspension of bismuth salicylate—U. S. P. (New and Non-official Remedies, 1926, p. 97) 0.13 Gm. (2 grains) in a liquid composed of camphor, 10 per cent; creosote, 10 per cent; olive oil, 80 per cent. Parke, Davis & Co., Detroit.

Concentrated Pollen Extracts-Swan-Myers.—In addition to the products listed in New and Non-official Remedies, 1926, p. 28, the following have been accepted: Cosmos Concentrated Pollen Extract-Swan-Myers; Dandelion Concentrated Pollen Extract-Swan-Myers; Palmer's Amaranth Concentrated Pollen Extract-Swan-Myers. Swan-Myers Co., Indianapolis.

Erysipelas Streptococcus Antitoxin-Lilly (Concentrated Globulin).—An erysipelas streptococcus antitoxin (Jour. A. M. A. August 28, 1926, p. 671) obtained by injecting horses subcutaneously with strains of hemolytic streptococci obtained from Dr. A. R. Dochez from human cases of erysipelas lesions, bleeding the horses, and when test bleedings show the serum to have reached the desired potency, bleeding as plasma which is concentrated and refined. Marketed in syringe containers (therapeutic dose) containing 5,000 "units." Eli Lilly & Co., Indianapolis. (Jour. A. M. A., Feb. 5, 1927, p. 403.)

Antistreptococcic Serum (New and Non-official Remedies, 1926, p. 339).—This product is also marketed in 20 c.c. and 50 c.c. piston syringes. Parke, Davis & Co., Detroit.

Tablets Gentian Violet Medicinal—"National," 0.0324 Gm. (1/2 grain).—Each tablet contains Gentian Violet Medicinal-"National" (New and Non-official Remedies, 1926, p. 167) 0.0324 Gm. (½ grain). National Aniline and Chemical Co., New York.

Enteric Coated Tablets Gentian Violet Medicinal-"National," 0.0324 Gm. (1/2 grain).—Each tablet contains Gentian Violet Medicinal-"National" (New and Non-official Remedies, 1926, p. 167) 0.0324 Gm. (½ grain) and is coated with phenylsalicyate containing some keratin. National Aniline and Chemical Co., New York.

Ricinoleated Scarlet Fever Antigen.—A bacterial vaccine detoxified with sodium ricinoleate according to the method of Dr. W. F. Larson. Enough favorable evidence has accumulated to indicate that this preparation is worthy of clinical trial by physicians. The antigen is used for active immunization against scarlet fever.

Ricinoleated Scarlet Fever Antigen Immunizing-Lilly.—This product is prepared from whole broth cultures of scarlet fever streptococci, containing 1,000 million organisms in each c.c. modified with 2 per cent of sodium ricinoleate. It is marketed in 1 c.c., 5 c.c. and 20 c.c. vials. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., Feb. 19, 1927, p. 567.)

Plague Vaccine, Prophylactic.—Plague bacillus vaccine (New and Non-official Remedies, 1926, p. 354) marketed (for single vaccinations) in packages of two 1 c.c. vials; in packages of ten 1.5 c.c. vials; in packages (for double vaccinations) of one 20 c.c. vial; in packages of three 1 c.c. vials. Eli Lilly & Company, Indianapolis.

Cholera Vaccine, Prophylactic. — Cholera vaccine (New and Non-official Remedies, 1926, p. 351) marketed in packages of three 1 c.c. vials; in packages of ten 2.5 c.c. vials. Eli Lilly & Company, Indianapolis. (Jour. A. M. A., Dec. 25, 1926, p. 2163.)

MINNESOTA MEDICINE

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EDITORIAL

Medical Ethics and the Newspapers

In the American Medical Association Journal of January 27, 1927, the subject "Popular Medical Information" is editorially discussed.

The following statements are made: "Physicians want causes, principles and methods popularized with a *minimum* of *accent* on *personalities;* newspapers and magazines * * * attempt the same ends through the *primary promotion* of *individuals,* * * * headlines in our press * * * popularizing, even *dramatizing,* persons rather than matters. * * * This is *inevitable* and *uncriticizable.* * * * Most physicians object because it (1) unduly promotes the *personal interest* of *one* * * * over that of his *colleagues;* (2) often leads to acceptances of one physician's opinion; * * * (3) gives to the charlatan opportunities in the promotion of his wares; (4) leads the public * * * to destroy their confidence in all medical teachings; (5) tends to create exalted ideas of the importance of minor health matters; (6) creates * * * opportunities for spurious 'specialists' to promote their half-baked ideas, * * * in the name of medical science." (*Italics* ours.) The development of "Hygeia," the "clip service" and the information available through the archives of the American Medical Association are mentioned as the best avenues through which the public may be educated via the newspapers.

Viewing the subject from a somewhat different angle, is the time not propitious for the correction of an abuse which has become magniloquent beyond the stage of nausea? Is it better to close our eyes to these acts and all fall in line and, as Goldsmith says, agree that "all the little fishes talk like big whales"? Can the newspapers be induced to respect the code of ethics or must we agree that the frequent appearance in the newspapers and magazines of the names of a few members of our profession is "inevitable and uncriticizable"?

The medical profession has for generations assumed a clearly justifiable pride in the attitude of its members regarding this question. So universal has been their consensus that the spontaneous and frequent appearance of the name of any regular member of the profession in the newspapers has served to classify him in a category which was in no sense enviable. Unfortunately such classification has been confined to the sacred precincts of the professional mind and the general public shared in no degree in scenting the onus attached to this blatant method of self-aggrandizement. The innocent public, not realizing the true state of affairs, has always taken its cue from the glaring headlines with the inevitable result that the advertised physicians have profited while their confreres have been robbed of some of the practice which otherwise would have come to them.

There are numerous methods of taking advantage of one's brother in the practice of medicine. The secret division of fees is only an example and yet the frequent appearance of a physician's name in the daily papers is, perhaps after all, the most reprehensible and undoubtedly the most

profitable. As a rule, the higher the standing of the physician, the greater is the onus and likewise the profit. The editorial quoted above states that the practice is "inevitable and uncriticizable." Is this true? We sincerely hope it is not.

It is most unfortunate that instances are legion in which the names of outstanding figures in our profession have repeatedly appeared in the daily papers. Likewise despatches have been broadcast from their home cities and the newspapers have published frequent reports of interviews with them.

Many of our readers will remember a circumstance which took place a few years ago during a meeting of the American Medical Association. A certain renowned surgeon was listed upon the program for a paper. The paper was to have been read on a Wednesday morning. Excerpts from this paper appeared between quotation marks in the daily papers on *Wednesday* afternoon and *Thursday* morning. Many paragraphs of the paper were copied verbatim and yet, as it happened, this surgeon was unavoidably delayed and his paper was not read until *Thursday afternoon.* Should this surgeon have been called upon to explain? We believe he should. Should the standing of any physician have entitled him to immunity? We sincerely hope that such is not the case.

It is realized by everyone that some members of our profession have reached a degree of eminence which necessarily attracts the spotlight of publicity. Newspaper representatives attend the meetings which they address and what they say is avidly appropriated for the simple reason that it makes good "copy." This is perhaps a worthy educational procedure and even if it were not such, it is probable that it would be difficult to remedy the situation. And yet it is most unfortunate that it is these same individuals who not infrequently furnish newspaper reporters with interviews upon almost any subject from the advisability of bobbing the hair to the Nicaraguan situation. Are such interviews necessary, desirable, fair, or ethical? Should the standing of any physician before the public warrant such practice? Is any good service, aside from the increased influx to him or his clinic, served by such flouting of the established standards? We do not think so.

Is it ethical, and to the best interests of the public or the profession as a whole, to have a barrage of despatches wired from any medical center, in which individual members or groups of the medical profession are "played up" under large type headlines? We do not think so.

There is no gainsaying the fact that the "playing up" of the term "specialist," "scientist," etc., makes a profound impression upon the lay mind. The fact that the interview given in any particular instance reflects the actual truth or that the physician or group of physicians quoted are competent, alters in nowise the sobriquet which can legitimately be placed upon this method of advertising as a label.

Can frequent repetitions of this sort of thing be prevented? We believe they can. Furthermore—if we properly sense the attitude of the profession in general—we believe that the cessation of such unethical advertising will be demanded. Is this not a matter of sufficient importance to demand the attention of our House of Delegates? We believe it is.

Constructively one may say that the writer, many years ago, upon being elected to an important office, found himself almost daily requested by the newspapers for an opinion regarding a variety of questions. His first action was to insist that the newspapers represented, when publishing any information given by him, refrain from using his name. Although many years have elapsed, this confidence has been violated but once or twice.

In the county society to which the writer belongs a committee has been appointed for the express purpose of passing upon subjects of medical interest before they are presented to lay readers. The names of the members of this committee never appear. Instead, the newspapers use the expression, "A representative of the ——— county medical society states, etc." Should not *every* county society make the same arrangement? It would seem that some plan more or less closely allied to that employed by this county medical society should be adopted by the county, state and national associations.

In Minnesota approximately one hundred men are given medical diplomas each year. These men go forth with high ideals in their heads and perhaps a copy of "the code of ethics" in their pockets and with the intention of earning an

honest livelihood. Can it be done in the face of such unfair competition? Can they retain their high ideals? Can those who look to the leaders in our profession earn an honest living provided those who are "sitting pretty" advertise unethically? The methods referred to savor all too largely of those of the quack. While it is undoubtedly true that the medical profession as a whole has been over-modest in appearing before and presenting its knowledge to the laity, the question is pertinent as to whether or not the methods above referred to are calculated to remedy this condition to any extent, or indeed, whether these methods can, in the vast percentage of cases, be thought to be actuated by motives which may be altogether altruistic.

The publicity herein referred to, is, to say the least, loathsome to a vast percentage of physicians who have the best medical ideals in mind, not only fails to fulfill the objective—the education of the laity—but offers to certain members of the profession an opportunity for gaining publicity, thus increasing their practice, setting a bad example to those who perhaps look to them for guidance, thus taking an undue advantage of their fellow practitioners. The following quotation from the New York Herald-Tribune shows that one editor, at least, grasps the situation. He says in part:

"During recent years the annual scientific meetings have been reported widely in the newspapers; very competently, on the whole, but not by experts. Skilled scientists would make poor reporters. It is natural that the most striking—and least probable—announcements should be considered the best news. Of these the public hears most. Less noise is made by the hundreds of solid, sensible and useful papers that were read at ————, but it is from these that we will hear most and win most as time goes on, and after the idea of sunspot wars has vanished, unlamented, into limbo."

Once more we ask, can such flamboyant outbreaks be prevented? And once more we state our conviction that it not only *can* but *must*, be done. The "joy ambition finds" must be curtailed if the medical profession expects to live up to its ideals in the matter of *Ethics* and the *Newspapers*.

Pernicious Anemia

The disease entity of pernicious anemia seems well established although certain diagnosis is oftimes difficult and its etiology is admittedly unknown. Whether in the future it will be possible to subdivide further this type of anemia remains to be seen.

Various theories as to the causation of the disease have been proposed. These include (1) a lack of vitamine A in the diet, which allows the growth of the Welch bacillus in the intestines and the development of a toxin; (2) a deficiency of stroma-forming cells in the bone marrow; (3) a malignancy of the bone marrow, and (4) a specific infection. Various facts seem to disprove all the theories so far proposed.

The recent work with liver feeding in pernicious anemia reported from Boston has attracted considerable attention. In experiments on dogs, Whipple found liver more stimulating to blood regeneration than any other meat. Heart, red muscle and kidney, although serving as a stimulus to blood formation, proved much less powerful. Iron alone was found to be less stimulating than meat alone and arsenic seemed almost inert.

As a result of the application of these findings clinically, Minot and Murphy have recommended a diet which, in short, is supernourishing, being rich in meat, raw fruits and vegetables, and liver (preferably raw) being the piece de resistance. In a reported series of forty-five cases of pernicious anemia improvement under this diet was the rule within one or two weeks. John Fulton, Jr., in a series of thirty-six cases observed at the Peter Bent Brigham hospital, a report of which we were fortunate enough to see, had much the same experience. All cases with one or two exceptions did well on the diet, the red cells increasing to over four million in some cases in an incredibly short time.

Whether the experience in Boston will be universal remains to be seen. A certain number of remissions in this disease is the rule. Liver diet is certainly empirical and not logical if there is anything to William Hurter's conception of pernicious anemia. This distinguished Britisher first began writing about this disease in 1888 and emphasized repeatedly his conception of the malady as "infective hemolytic anemia." As far back as 1903 he reported the presence of a deep seated pure streptococcic infection of the tongue

in three cases and mentioned the existence of a hemolytic infection in the mucosa of the stomach and in some cases in the intestinal mucosa. What methods he used to determine these facts we do not know and we are not aware of any investigations along this line having been done since.

The report by Dr. Schneider, appearing in these pages, of biopsies performed on the tongue in pernicious anemia cases is especially interesting. Whether this procedure will prove practical in establishing a diagnosis will depend on whether in a larger series of cases the finding of deep seated streptococci in the tongue sections is constant and limited to this disease. This preliminary report looks as though this might be the case. The presence of deep seated streptococci in the tongue may, however, be the result of an ulcerative stomatitis with no diagnostic or etiological significance as far as the anemia is concerned.

It is to be hoped that further investigation in regard to extensive infection of the gastro-intestinal tract, the stomach and intestines especially, will be made in an effort to determine whether pernicious anemia is actually a specific infection, some of the earmarks of which it certainly has.

MISCELLANEOUS

REPORT OF THE ANNUAL CONGRESS ON MEDICAL EDUCATION, LICENSURE AND HOSPITALS—Chicago, February 14-17, 1927

Great is the power of the A. M. A.—and wide the distribution of its efforts. Not so many years ago it had but one great conclave yearly—its annual session. While it may be surrendering some of the glory of these large medicinal offensives to such groups as the Interstate Post-Graduate Assembly, it is drawing in its lines of influence with increasing numbers of "Annual Congresses" pertaining to the peculiar and intensive work of special committees and departments. This meeting at the Palmer Hotel, Chicago, of the representatives invited by the A. M. A., was for the purpose of discussing "Medical Education and Hospitals," and meets co-ordinately with the "Federation of State Medical Boards." Appointed to attend and represent the Minnesota State Medical Association by its President, Dr. William Braasch, the writer proposes to make a report to the society in the pages of Minnesota Medicine. The time is so crowded at the one annual session that at best little attention can be given to committee reports. In any case, the gleanings of a meeting such as this may interest some and others not at all. For the latter, let the report be read only by title; for the former, let them get it here in this form and digest it at their leisure before the meeting.

THOSE IN ATTENDANCE

This is not a youthful assemblage. Everyone hugs his manuscript closely, but reads it well. Little oratory is in evidence, and less general discussion. Perhaps this is because notably controversial matter is not introduced. Evarts Graham of St. Louis holds rather decidedly opposite views from W. A. Pusey of Chicago, yet they reservedly and dispassionately assert a stand that is novel to none of their audience and represents at most different angles of the same view—the questions pertaining to why general practitioners are getting scarce and why recent graduates cannot fancy a rural habitation. Teachers predominate; there are a few hospital men and public workers.

MEDICAL ETHICS

Arthur Dean Bevan endeavors to enlarge the curriculum by injecting a definite course in this sublime domain, and forthwith to bring out the recent graduate clad in the knightly armor that will render him safe from the devastation of materialism and save him from the worship of the Golden Calf.

Ray Lyman Wilbur (erstwhile president of the Association and still of Stanford University) says the curriculum is already absurdly long, and, as in a useful car, efforts should be expended to take parts off rather than to put them on.

President-elect Jabez Jackson had some sound advice to give, and makes it clear enough why doctors should not advertise. Yet, Professor Carlson of Chicago University seemed to settle the issue by stating that students could not be taught to be ethical any more than they could be taught to be intelligent.

Louis Wilson spoke of the flood of candidates that came to European centers of education after the war. These often came from backward countries, having poor traditions, and seeking most of all a betterment of their physical station and a financial harvest. Thus it is seen that in "character building and personality creation" medical schools tackle too much if they essay to carry on without the aid of good homes, religion and the heritage of fine cultural trends that are no different for physicians than for anyone else. It was pointed out effectively by George F. Follansbee of St. Alexis Hospital, Cleveland, in speaking of interns, that here the staff members have the opportunity and the necessity of passing on to the new recruit by personal example and daily precept those principles we all stand for so zealously.

THE GENERAL PRACTITIONER

A discussion of this engaging personage brings out many tributes that might even surprise the subject, as did the clergyman's remarks astonish the widow at the bier of her departed spouse. We should all look for a report soon to appear from a commission directed by Willard C. Rappleye, New Haven, Conn. The statistics given are most engaging and bear on many features of our medical life, and throw light on what is coming in specialism. "Of the 1,920 graduates

studied, 53 per cent began to limit their work to a specialty without any previous general practise." This is only one item in an inspiring document which lends great weight to Graham's contention that, much as we may lament the passing of a fine old type of doctor, another economic deal of the social and industrial cards has called into demand and being a totally differing régime, and out of it the drift to urban life and motorized roads renders life in hamlets for modern doctors impossible. The same story is told by N. P. Colwell, Secretary of the Council, in statistically picturing the enormous growth in hospitals. Modern doctors are hospital trained and in them they are going to practise. Dr. Pusey is alarmed, and doesn't like it, but he must know that many a family is riding in a car when they should have stuck to the horse, but it is folly to be angry with them, and who knows but that they are not half right anyway!

THE AGE OF GRADUATION

W. J. Mayo cited his own rise as a general practitioner, and some glorious rise it has been. He thinks most good doctors came from the farms. The writer, having done so, agrees with him. He told us he graduated at the age of 21. It is a great good fortune that he was not 35, and that he had some forty splendid years to carry on, but if some had their way few students would have much hair or enthusiasm when introduced to their life work. Wilbur and Follansbee both agree that the student gets nowhere until he is given and accepts personal responsibility.* The former cryptic speaker would relegate to the secondary schools all the basic sciences and chiefly rely on teaching "the Art of Medicine" in the medical schools—direct physical diagnosis on the patient—in something like three years. The latter points out very sanely that medical education is only begun in the schools, and as interns the material must be molded gently into the proper form to prosecute a real education for the rest of the doctor's life. Wilson names a Bologna orthopedist who spent four years in anatomy, five more in general surgery, and then started to study his specialty! This man now has fifteen American students with him, *but he graduated when he was 20 years old.* From Pennsylvania comes the whisper that should arouse hope in coming students—they say they are lessening the hours of attendance *"to let the student have a little time to think."* Another says, to play poker! This may answer Mayo's observation, and point a relief to the state where "students may leave their schools with a mind burned out." Pusey is not so sure that the zeal for making research workers is justified. He might have added that research workers, like poets, are born and not made. Mayo reflects that a glamour of spirituality surrounds an effort to save unborn generations, while a feeling of sordidness attaches to any move to ease presently those tortured bodies and souls which beseech our aid. Well said, as usual.

*A warden of Cook County hospital tells me that since interne years have been made compulsory, those who take them do not show the individual zest and acumen of an older regime when he made the personal choice.

PREVENTIVE MEDICINE

Professor W. S. Leathers, of Vanderbilt University, Nashville, Tenn., speaks out boldly for his service. While it appears that he might agree with Wilbur, and divorce "head specialists," and with others on silencing more humble segmental docents like orthopedists and dermatologists, he certainly could not see an acceptable school that would not assist the Almighty in getting local help to administer the Universe. He wants a lot of Public Health in the course. He didn't say it blatantly nor annoyingly, but he hinted that out of Rappleye's cohorts* that are gradually to decrease the number of doctors per population from the present of 1 to 891, to 1 to 1,300 (estimated, of course) in 1955, he would abstract from 5 to 10 per cent to keep up a constant army of some 30,000 workers in constant touch with the public treasury. Someone should page the Taxpayers League!

If these efforts encroach upon the domain and work of private practitioners he graciously reminds that most of the paid agencies will plug hard for the principle of "yearly medical examinations," and forsooth, if the doctor is able to drag himself to the proper making of this routine examination (on folks without a complaint to assault) something may come of the offer On the same subject, a man whose name I missed, raised the often heard protest that much of the "Public Health" effort should get back and be administered by the "family doctor"—mentioning the very widespread activity of the present parent teachers associations and their campaigns to have all children brought before their family physician at proper intervals rather than before some arbitrary, impersonal flying squad known variously as school doctors and nurses. In briefly again pointing out that the control of all these efforts easily gets away from the medical men, and there are scores of voluntary agencies battering at the legislative doors to become official governmental agencies; and soon we must behold a bureaucratic commonwealth, of which the Kaiser's much condemned domain of a few years ago was only a feeble forerunner. This method of "strengthening the foundations of government" can only be a most doubtful expedient at the best. It is in keeping with a lot of other directional effort to "make men good"—you see we still retain the priestly function.

THE PRESENT STATUS OF HOSPITALS

It can be seen that the noted English medical schools grew about established hospitals, following a definite trend in medical education that was as fortunate as it was logical. We came to it in our country, but not without another sort of beginning in private schools that ended in bad repute. N. P. Calwell (vigorous director in the A. M. A.) has an astonishing lot of information about us and our hospitals. Study his figures on hospital increase, their thirst for interns, and the number controlled, if not owned, by medical schools, and one soon sees that hospitals are now and must continue to be an integral part of our medical educational system. Young medical graduates may be a

*From report of Commission on Medical Education.

little humiliated, but they will only get the truth if they read the proceedings of this assembly, and find it reiterated again and again that in leaving school their education has only begun. Indeed, some would have practitioners checked up as to their status (by examinations, I presume) at stated intervals, such as five, ten or fifteen years. The writer protests against any such tests after twenty years! The position of the hospital and its magnetic pull on rural doctors, bringing them into our urban concentrations, is too big a subject to report here, but observe this: Dr. Dodson asserts that an analysis of errors should lead us to avoid a second one of the same kind. He had reference, at the time, to his fear that non-medical groups are going to capture our public health leadership, but he used as his example of the first error our loss to the cults of "mechanical therapy."

Frank B. Granger, of the Boston City Hospital, would obviate that, and build into our hospitals the proven and worthwhile departments. Of course he showed how they should be used, and the staffs came in for the usual pommelling, because they used such a department only for "hopeless chronics," and passed up the industrially crippled and subacutely confined, many of whom could be restored to economic independence much facter if given skilled mechano- and electro-therapists' aid, based on prescriptional orders. Again, schools for these folks are advised, and New York State's representative sends out a whoop that their Department of Education is the agency to determine what a "school" is to be, and asserts its unqualified capacity to keep whatever minions any school belches forth from descending to quackery. More anon. Anyway, whether they invite it or not, hospitals are in the limelight. They deserve and seek (not unsuccessfully) endowment; step by step, as they come into our scope of education and life prolongation, they must synchronize with all economic and social advances approved by judicious and thinking opinion—they must devise the machinery and directional capacity to move with it. Theirs is no longer an isolated enterprise that rises or falls by its own efforts; it assumes community responsibilities, and rightfully demands sympathetic support.

INTERNS

Minnesota is still something of a pioneer in demanding the "fifth, or intern year." Let no intern assume that the "fathers in medicine" have no interest in him. Let him read all that is published of the splendid and sane remarks of Geo. E. Follansbee, of Cleveland. It is comforting to observe that in St. Mary's hospital at Duluth, we have tried to put into operation nearly everything the Doctor spoke of as desirable. Everyone agrees that the intern cannot get on unless you foist responsibility upon him; yet, you cannot give him that chance until you know what he is capable of doing. He appears at times to be so fed up after a process of six-year-stuffing that indeed his "quiz compend" memorized cargo of supposed facts deserts him at the threshold of an opportunity to use that reason and personality that all the speakers commend so highly. Certainly everyone approves of the idea of "living with the intern on ward rounds," and obviously the man who claims his private patients cannot be studied by the intern has indeed an odd clientele. The unanimous report is that patients like this round—the more the merrier—the more they have to talk about when they go home.

Where hospitals are large enough, a growing disposition is seen to add "residents from the best interns on a modest salary." This is virtually one of the best present day means of working into a specialty, and in various forms under such men as Pusey and Schambeau, and in clinics here and there, shows a proper return to the preceptor system. This, in fact, immortalizes the attainments and the "art" of the good men that otherwise might easily die with them. If this meeting is in any way representative of present day thought (and it appears to be), then the teachers in medicine are faced vastly more with the "teaching of an art than a science." One need not agree with McCormick of Kentucky, that "whole time teachers in basic medical sciences are controlling medical education to its enormous detriment," to at least urge that ethically minded, spirited and well trained staff attendants in our good hospitals, have, with interns, a great opportunity to hold the promising material in our great profession close to those traditions that have triumphed magnificently in the past and promise more for the future. Indeed, Wisconsin has taken a most suggestive step in sending out its fourth-year students to carefully chosen extramural preceptors.

EDUCATION FROM POSTGRADUATE CLINIC PROGRAMS

Walter Bierring, of Des Moines, Secretary of the Federation of State Medical Boards, was a good man to discuss the genesis of our present day stupendous medical conclaves. Naturally, the line of discussion soon led to Peck and Peoria, Ill.

The essayist agreed with many others that the splendid efforts of the "assembly of the world" may deteriorate solely because of size and "amplifiers." A clinic, like a well, may be "dry," but not quite of such aridity as to render the name incongruous.

State medical societies are coming to arrange demonstrations that are not so large but yield a maximum of opportunity for all practitioners to keep in sight of the legal expectation, the "standard of practice of his time and locality." Schools and alumni associations are arranging the same opportunities. Edward Evans of La Crosse tells us that the first great step toward rejuvenation in that spirited commonwealth (ruled by the LaFollettes) was to get a full-time, non-medical state association secretary. Some of the things he has done will be enumerated in discussing the "Basic Medical Practice Act."

Charles A. Gordon,* of Brooklyn, stopped off between trains (and obstetrical cases) to tell of the brilliant accomplishments of Kings County and the denizens of Long Island. What he has said and what everyone knows, is that any good doctor must admit that it is a very dry year in his reaping of accomplishment when he does not learn more than he ever got in any year in college; and some will tell you truthfully that they

*A most excellent and busy gynecologist.

have encompassed in some periods of two years more than they got in all previous endeavor. That being the case, it is up to every individual man to ask himself how he is going to get his quota. Certainly he will not get it staying away from medical conferences and hospital staff meetings, nor by offering sneering and slighting comments upon the discussions he hears when he does attend; certainly he will not get it by investing his savings in Mexican mines and neglecting life insurance. The manner of popularizing our meetings—state, county and hospital—deserves the fullest study and some pedagogical guidance, because it is obvious that as with interns so with practitioners—it is not what they are *told to know* that sticks, but what they *think out* on their own power that remains and builds as a foundation. He is a fortunate man, indeed, who has in the foundation less of prejudice than of principle.

FOREIGN STUDY AND INTERNATIONAL AMITY

Louis B. Wilson (always a man of great charm and suavity) has a paper which all should read. He tells how those seeking to enrich our treasure house of scientific facts may go to foreign centers, get what is possible, and not give offense. Needless to say, traveling from a great graduate school to foreign centers he had an entree not given to many. However, the writer, without any prestige, and few introductions, covered some of the same ground a year ago, and found the same decidedly friendly feeling everywhere. Indeed, Medicine is an endeavor that can know no national boundaries—Pasteur's life illumined the whole earth, and it claims him, granting to France that profound courtesy that inherently goes out among gentle folk to a mother.

Read what he says about Italy especially, and see how closely our profession is tied up with social and economic trends which few of us strive to understand.

With the very recent experience so freshly in mind of a visit to a great medical school just opened—a factory unit system—skyscraper—reinforced steel and concrete—express elevators—all so redolent of like structures that belch out industrial machinery—what else are we interposing besides standardized research rooms, to enkindle in a Hunter or a Pasteur that spark of individual genius that shatters routine and mounts on the wings of destiny to establish new epochs?

QUARTER SYSTEMS, BASIC SCIENCE LAWS AND LICENSURE

These seemingly disconnected problems came under a unified discussion, and as the intricacies unfolded it could be seen that they revolve about ways and means to best safeguard our population in its search for accuracy and safety in matters of health.

In the first place, it can be stated that the field of medical licensing boards is coming to be narrowed to the degree that so few applicants now graduate from poor schools that it is unnecessary for the boards to so explicitly outline what he should and must have been taught. That indirect use of these boards to enforce the improvement of medical colleges has ceased to be a great need. Instead, for example, if schools can work the four-quarter system and push a good student through in three calendar years, it is absurd to hold that his license is in question because he did not spend exactly the years stipulated according to the board's regulations. Much was said to show the advisability of working the expensive plants of our colleges the year around—granting that the summer session might be skimped a bit in actual instruction, it was pointed out that the season might produce certain material not found at other times, and by vacationing at other seasons of the year teachers might well find those whom they sought to visit at home. If everybody vacations at the same time they might meet by accident, but not in their pedagogical attire or mental attunement. It seems, in any case, that the boards are all agreed on their province, and Class A schools may soon see their graduates given the hand of welcome without too much inspection of mental baggage when the state examining boards pass on these new medical immigrants.

Edward Evans, of LaCrosse, indeed stirred up the discussion* with his recital of what the Basic Medical Practice Act was doing for Wisconsin. To those of us in a state where we are presently striving to enact a similar law and have been told much about its promises, perhaps it is now wiser to report in some detail the remarks of the Law's critics. Let us first, however, trace "the genesis of Wisconsin's attainments" as Dr. Evans gives them:

(1) Their State Association came to employ a full time, paid, lay secretary. This newspaper-trained executive has already made much history that is well known to most of us.

(2) They had Dr. Dearholt and his anti-tuberculosis work; also county nursing and "an awakening of the county societies" through good publicity—sending letters and Hygiea to the very legislators who turned them down twice before—and much besides; also a lay issue of their state journal, etc.

(3) Finally, by such state-wide education, getting their Basic Medical Practice Act through an almost unanimous assembly.

(4) They spent a good deal in publicity under the direction of those trained in that work. It is said they backed away and told the Wisconsin solons that the State Medical Association would not be their guardian; that they would assemble the facts, but assume no further responsibility. Yes, they did raise their dues—a good deal.

So far, what has been the result: Whereas two hundred chiropractors had been coming in yearly, only one has gotten by the Basic Science Board since. Much more was said, but let us listen to the critics:

(1) Dr. Crowe of Texas found much fault with it: "No law is any better than the instruments it contains to enforce it."

(2) Dr. Rypins, Secretary of the New York State Medical Examiners, says, "it is a gold brick" according to their light; that if we wait fifteen years it can be judged better; that Wisconsin has its full share of quacks still, even if they stopped the flood nearly

*Much the liveliest discussion heard.

three years ago. "Give the 'chiros' time and they will get over your hurdles and pass your examinations; anyway, you have no idea how many slipped in quietly and never came near any board."

(3) Stalwart McCormack, from Kentucky, said he did not oppose any plan for Wisconsin that so abundantly satisfied its people, nor did he feel different toward any régime that brought joy to the Russians, but he did object to either one coming forward as testimony before a world that is to accept the same panaceas. "Perhaps the disease was so bad in Wisconsin as to merit such a compromise with already established cults and their boards, but the disease cannot be as bad as that in most of our land."

The crux of the situation is obviously enforcement and ways and means to insure it. Hence, let us elaborate that phase under another heading:

KEEPING TRACK OF THOSE WHO ARE CALLED "DOCS"

You will be surprised and pleased if you visit the A. M. A. building and are shown their identification card system, which traces the student from his earliest to his latest graduate studies. All that is an outgrowth, and indeed, much of the instrument, which helped root out the "scandalous diploma mill" of a year or two ago. H. L. Mencken, in the Chicago Tribune of Sunday, February 13, "lambasts" the chiropractors as only a wielder of trained vitriolic shafts can do it. The bouquet he passed to us was not without its subtle sting—the present-day cost of getting a medical education and the corresponding weight of touch we administer in order to compensate, introduced his article. Little can we appreciate how eager the grafter in quackery and politics is to dig up a few unused diplomas and put them to work. Hence, while Wisconsin came to its law after study and thought, Connecticut did the same after a shameful scandal and a hasty effort to atone.

Now, with this in mind, Dr. Rypins and the New York board say we are on the wrong track. They advocate strongly the "registering of doctors yearly," and accordingly, the collection of a certain amount of money. But this should not be spent by the State Medical Association, either in convicting infractors of the law or in ferreting them out. When this is done they say the public cries "medical trust," and exclaims that a powerful clan is using its own weight and *power to lessen competition.* Possibly our law has "teeth enough"; perhaps its administration is being put in effective and understanding hands. But, quackery has always existed, and probably always will.

New York State, with all its teaching chartered and under the Department of Education, has, it seems, much more mobile machinery than others in moving about and cutting off the career of this and that "Doc" wherever found if he isn't properly stamped and approved. One recalls the fire of righteous wrath that emanates from a county society member when he majestically moves "that the board of censors of our society have this 'varmint' brought before the tribunals of justice—." Hase any one seen justice clogged by the number of these who ever get before her portals? Can anyone see a busy and indifferent attorney general's office going out of its way to see that the county attorneys do their duty?

TEACHING AND BEING TAUGHT

An apology should be offered for this verbose report. However, if you read this discerningly you will give the writer credit for attempting to sketch enough detail to induce you to read along the lines enumerated, where otherwise you could hurry on to what appears (offhand to busy men) to command their full attention. A Chicago man of much experience tells me that lay politicians, in a Len. Small atmosphere, are not much different from the crowd within our own profession, who, jockeying for position and trifling with destiny, postpone accomplishments that should already be ours. For example, the great Cook County hospital has only an autopsy attainment of 20 per cent of its deaths. He well asks, "How can graduate teaching improve when a layman is coroner, and one of the country's best pathologists is displaced because he autopsied too many?" Think of it, when in answer to argument against such a move he responds, "You do not need to cut up bodies to find out the cause of death—what have you got the *x*-ray for?" It has come to pass that better teaching can be done and more autopsies secured on private than on public charity cases. The same man says, "The poor thank nobody for the care they get; least of all do they thank the doctors. They will listen to no argument that doesn't revolve about the *good that comes to them.* The poor do not give a d—— for the other poor; they will do nothing for them, as indeed they did nothing for themselves." This is probably a statement that comes from reflection in a city that (while in America) holds most of its resident Americans in well policed and conducted suburbs. We may say, "Thank God we have none such in Minnesota."

But harken a moment: The big medical schools of Chicago could have taken over part of the big charity service and demanded autopsies as a sine qua non. Does any one think the politicians who, hearing of this amount of money cost to be lifted out of their budget for charity hospitalization, would turn a totally deaf ear? As soon as decent autopsies were routinely established the character of medical service would be so much better as to automatically induce all charity patients to demand that service—the rule would soon be as effective as in Vienna. In the meantine, Chicago University is spending five million dollars and getting about two hundred hospital beds—again disconnected and isolated—and either there or next door to Cook County hospital is going to announce a graduate school! Doesn't some of this remind you of our home conditions and the inability of our University and Minneapolis to come to a reasonable agreement? In the meantime, let none of us forget that Rappleye puts the age limit of activity in practice (*of medical students*) *as sixty-five!*

E. L. Tuohy, M.D.
Representative of the Minnesota State
Medical Association.

Chicago, Feb. 18, 1927.

OBITUARY

Dr. Amos Wilson Abbott*
1844-1927

Amos Wilson Abbott, son of Amos Abbott and Anstice Wilson (Abbott), was born in Ahmednuggar, India, on January 6, 1844. His education, interrupted by the Civil War while he was at Dartmouth, was obtained in four colleges. He was graduated by the College of Physicians and Surgeons, New York, receiving his degree of Doctor of Medicine in 1869. After practicing medicine in the East for a few years, he came to Minneapolis in 1877.

Dr. Abbott taught anatomy in the St. Paul Medical College and, in 1881, assisted in founding the Minnesota College Hospital, where he was Professor of Anatomy and later served as Professor of Gynecology. Later still he became associated in the same capacity with the Medical School of the University of Minnesota and held an emeritus professorship there until his death. At various times he had served on the hospital staff of St. Barnabas, Northwestern and Abbott. In conjunction with Dr. J. Clark Stewart and Dr. F. F. Wesbrook, Dr. Abbott founded the Minnesota Pathological Society. He held a number of offices in various medical organizations, having served as President of the Hennepin County Medical Society (1900-01), the Minnesota State Medical Society (1893), the Academy of Medicine (1888), the Pathological Society (1913-14), and the Western Surgical Association (1911). He was a member and Fellow of the American Medical Association and had the distinction of being the first delegate to the first House of Delegates of this organization.

Abbott Hospital, which was constructed with funds donated by the late William Hood Dunwoody, was founded by Dr. Abbott.

Dr. Abbott died Sunday night, February 27, 1927, after a short illness, having spent 53 years of his 83 years in the medical profession, the last half century in Minneapolis.

Surviving him are his wife, who was Miss Helen G. Wright of Delhi, N. Y., and three children: Mrs. Lyndon King, Miss Elizabeth Abbott and Wilson Abbott, all of Minneapolis.

He was a Mason and held a membership in the Lafayette Club.

At its meeting on March 7, 1927, the administrative committee of the medical school adopted the following memorial to Dr. Amos Wilson Abbott, Emeritus Professor of Gynecology:

Doctor Amos Wilson Abbott has gone on, in the fullness of his years—years of usefulness, honor and distinction, "to that bourne whence no traveler returns." Fifty years of professional life witnessed no weakening of the grasp of his remarkable mind, no lessening of his capacity for continual growth, no failing of his perennial interest in his daily work.

He was ideally the doctor of his day—the beloved physician. He was loved of his patients, his associates, his students, his friends. Invariably courteous, unchangingly loyal, emotionally reticent, naturally modest, quietly confident, keenly humorous, everyone knew him for what he very simply was—one of Nature's gentlemen, content to walk straight and strong in his accustomed ways.

Of diagnostic insight, of clear pathologic judgment, of surgical skill, one trait distinguished him above all the sterling qualities that entered into his make-up—*he was professionally honest.* He was pledged to scientific truth as he saw it—and he had the rare ability to see it clearly and to see it whole. He had a contempt for professional subterfuge and sham. He disliked camouflage. He distrusted the subtleties of medical opinion. He stood four-square to all the winds of theory that blew. With Minot, he defined science as "that body of truth that has acquired impersonal validity." Again and again, in his earlier years, he would sit out the discussion of conflicting professional views and at length, rising slowly to his feet, would say: "Gentlemen, how do you *know.*" And yet it was of the nature of the man himself to know and to help others to know. For he loved to teach.

One of the charter members of the faculty of the Medical School of the University of Minnesota, he bore a number of teaching titles and did honor to each in turn. He held for years an emeritus professorship. He was slow of speech, but when he spoke men always heard him gladly. They knew him for a lawgiver in his professional Israel.

His death is not a matter for regret. He has done a great, a noble work. His name is carved in the masonry of his beloved hospital and there it will remain. His thoughts, his words, his deeds will live indefinitely in the spirit he has created and enlarged therein, in the memory of workers who have worked with him and whose work will continue to be inspired by his leadership, in the service of the divine ministry of suffering he has followed so long.

Dr. Frederic J. Souba

Dr. Frederic J. Souba, 41 years old, a member of the medical staff of the University of Minnesota for the past 10 years, died suddenly in his office, March 7, 1927.

Dr. Souba was born in Hopkins, and there received his early education. Later he attended the University of Minnesota, and in the college of science, literature and the arts established a high record of scholarship. He was elected to Sigma Xi, honorary scientific fraternity, and after his graduation from the academic college, he entered the college of medicine. There also he established records for scholarship and was elected to Alpha Omega Alpha, honorary medical fraternity.

After his graduation from the medical school he entered private practice for a time at Eveleth, and

*Read before the Hennepin County Medical Society at its meeting of March 7, 1927.

later returned to Minneapolis, where he became affiliated with the University medical staff.

For a number of years he taught university students at General hospital as assistant professor of obstetrics and gynecology. He was a member of the American Medical Association, the State Medical Association, the Hennepin County Medical Society and the American College of Surgeons.

In addition to his work with university students, at General hospital and his private practice, Dr. Souba was on the staffs of Northwestern, Fairview and Asbury hospitals. He was also very active in the Masonic order, being a member of the Albert Pike lodge of Hopkins, a member of the Shrine, and a grand officer of the Order of the Eastern Star.

He is survived by a wife and three small children, four brothers, Emil of Hopkins, William of Port Arthur, Canada, Arnold of Graceville, and Arthur of Chisholm, and a sister, Mrs. Willis Haugen of Biwabik.

Dr. Robert W. Archibald

Dr. Robert W. Archibald, milk expert of the Minnesota State Department of Health, died February 15 at a hospital in Hibbing, from injuries received in an automobile accident near Nashwauk.

Dr. Archibald was recognized as the outstanding authority in the United States on the sanitary regulation of public milk supplies, according to Dr. A. J. Chesley, executive secretary of the State Department of Health.

Since he began work for the state in 1917, Dr. Archibald has been responsible for the enactment of pure milk ordinances in approximately 100 Minnesota cities and towns, and has had general supervision of matters relating to pasteurization plants, certified milk sales and enforcement of sanitary regulations affecting dairy products. He also has served as an assistant professor in the department of preventive medicine and public health at the University of Minnesota.

Dr. Archibald was 37 years old. He was born in New Hampshire, and educated at Dartmouth college and the University of Pennsylvania. He came to Minnesota about 15 years ago and was a veterinary doctor at Lake City, later becoming milk inspector at Winona.

Dr. Chesley declared Dr. Archibald to be without question "the best man on milk sanitation in the United States." Chicago and numerous other large cities have sought to obtain his services, but he preferred to remain in Minnesota.

Besides his widow, Mrs. Hazel Sclover Archibald, he leaves a father and four brothers and two sisters. All except one, F. S. Archibald, St. Paul, reside in New England.

Dr. W. D. Lawrence

Dr. W. D. Lawrence, former owner of the Lawrence sanatorium, and a resident of Minneapolis for 48 years, died at his home in Minneapolis, Thursday, Feb. 17, 1927. He was 74 years old.

He was born May 16, 1852, at Lawrenceville, Canada, and received his early education there. At the time of the Fenian raids in Canada, shortly after the Civil War, he served as captain of the Seventy-ninth Highlanders. He came to the United States in 1872 and enrolled in the Chicago Medical school. Following his graduation he studied abroad and came to Minneapolis in 1879.

Dr. Lawrence organized the Minneapolis Medical and Surgical Institute in 1894 and in 1900 founded the Lawrence sanatorium. He was president of the National Uplift Society and vice-president of the National Christian League. He was a member of the executive committee of the World's Purity Federation and a member of the Minneapolis and St. Paul Academy of Medicine. He also was a member of the Minneapolis Athletic Club and the Minneapolis Automobile Club.

Dr. Lawrence is survived by one brother, Alfred Lawrence, and one sister, Mrs. George Morrison, both of Pasadena, Calif., and a niece, Miss Pearl Lawrence of Minneapolis.

Dr. William H. Salter

Dr. William H. Salter of Duluth died suddenly at his home, February 18, 1927. Death was due to heart disease.

William H. Salter was born in Minneapolis in October, 1864. He went to Duluth with his parents when a small boy and attended a private school there. He later attended school in Lawrenceville, N. J., and then went abroad for a few years with his father, who was in American church work in Italy. Upon his return to the United States he again attended school in Lawrenceville and later completed his medical course at the University of Pennsylvania. Following his graduation he attended the University of New York and did hospital work at Bellevue hospital.

Dr. Salter established his practice in Duluth thirty years ago. He was physician of the normal school there and for a number of years was a member of the school board.

Besides his widow Dr. Salter is survived by two brothers, Frank I. and C. C. Salter, and a sister, Miss Mary Salter, all of Duluth.

Dr. Bertolet Perry Rosenberry

The following resolution was passed by the Winona County Medical Society and Winona General Hospital Staff in remembrance of Dr. Bertolet Perry Rosenberry, who died January 19, 1927:

Whereas: Almighty Providence has suddenly called from our midst our friend and fellow-worker Dr. Bertolet Perry Rosenberry, for many years a member of this Society and a member of the Staff of the Winona General Hospital;

Whereas: We as members of these organizations have been privileged to enjoy his genial companionship, his keen professional judgment, and his strict adherence to the ethics of his profession;

Therefore: be it resolved that we, the members of the Winona County Medical Society and of the Staff

of the Winona General Hospital, deeply deplore his untimely death, occurring at the prime of his life and at the height of his usefulness; and that we feel we have lost a true friend and willing co-worker, and that the community has lost a good citizen and an able self sacrificing physician.

Be it further resolved that we express our sincere sympathy to the bereaved family and that these resolutions be inscribed on the minutes of the Winona County Medical Society and Staff of the Winona General Hospital and a copy be sent to the Winona Republican Herald.

Winona County Medical Society,
Winona General Hospital Staff.

An obituary notice regarding Dr. Rosenberry was published in the March issue of MINNESOTA MEDICINE.

Dr. Joseph G. Millspaugh

The general practice of medicine has attracted to its ranks many men of the highest type of character. Dr. Joseph G. Millspaugh as a well-trained student, a pioneer physician and a general practitioner was of this group.

He graduated from the University of Michigan in June 1876 and from Columbia University in 1877. His schooling he secured through his own efforts, as he was left an orphan at an early age.

The first six years of his professional life he spent in Battle Creek, Michigan. On account of failing health he moved to North Dakota and settled in Park River, where he soon found himself busy as a pioneer physician. He was active in the organization of the North Dakota State Medical Association and was elected its first president, serving in this capacity for three consecutive terms.

In 1891 he moved with his family to Minnesota and for the past thirty-five years he had been engaged in general practice in Little Falls, Minnesota. He was active in the building and development of St. Gabriel's Hospital in his home town. He held various offices in the medical societies of Minnesota. For ten years he was councilor of the Second District of the Minnesota State Medical Association and in this position his wise counsel was of great value to his colleagues.

He continued his work until December 1926, when, at the age of seventy-five, he locked his office, going west to spend the winter in Arcadia, California, with his son. His plan was to return to his work in the spring. This, however, was not to be. On January 30 he was stricken, and the following morning he died.

His was the life of the hard-working pioneer physician and general practitioner. His ideas on the subject of medical ethics and general conduct were high. He knew no compromise with wrong.

With his long years of practice and his high ideals, it is hard to imagine a more ideal life of honest, intelligent service.

ARTHUR W. IDE, M.D.

OF GENERAL INTEREST

Dr. Samuel N. Litman, formerly of Meadowlands, Minn., is now located in Duluth.

Dr. R. J. McAdory has disposed of his practice at Vernon Center and has moved to Minneapolis.

Dr. H. DeBoer has been elected mayor for the village of Edgerton for the fifth consecutive time. He is also a member of the School Board.

Dr. T. C. Routley, of Toronto, General Secretary of the Canadian Medical Association, visited the Mayo Clinic during the first week of March.

Dr. B. T. Bottolfson, of Moorhead, was recently elected mayor of his city by a large majority. Dr. Bottolfson assumed his new duties March 1.

Dr. W. H. Goeckerman of the Mayo Clinic, Rochester, will spend the next two months visiting clinics in Italy, France, Germany, and England.

Dr. John Butler of Minneapolis has recovered from a serious illness which has incapacitated him for the past six months and has now resumed his practice.

One of the largest cancer clinics in the United States was opened in February at the University of Minnesota. Dr. Henry Michelson has been appointed director.

Dr. and Mrs. Charles D. Harrington of Minneapolis are now in the South for a month's trip which will include visits at Daytona Beach, Fla., Wilmington, S. C., and Washington, D. C.

Dr. George T. Baskett, superintendent of the State Hospital for the Insane at Willmar, Minnesota, has resigned to become superintendent of the Pennsylvania State Hospital at Wilkes Barre.

Dr. George H. Coons, of the University of Michigan, gave a Mayo Foundation lecture in Rochester on February 25. His subject was "Some applications of medical research methods to plant pathology."

Dr. H. J. Thornby of Moorhead will leave early in May for a two months' trip abroad. Dr. Thornby will attend the Post Graduate Clinic Assemblies of North American Physicians in various cities in Europe.

Dr. Walter J. Marcley has resigned from the General hospital staff, Minneapolis, in order to put in his full time at the United States Veterans' hospital. He has been in charge of tuberculosis work at the General hospital.

A bill has been introduced in the Illinois legislature providing for free medical examinations without treatment by a Board of Medical Examiners to be appointed by the Department of Public Health in municipalities with a population over 20,000.

Dr. A. J. Herbolsheimer, St. Paul, has been selected as air medical examiner for Minnesota by the United States department of commerce. It is planned by the department to have a physician in every town or city, where there is aeronautic activity, to examine pilots.

Dr. Alexander A. Maximow, Professor of Anatomy at the University of Chicago, gave a Mayo Foundation lecture in Rochester on the evening of March 8. His subject was "Some applications of the method of tissue culture to the solution of pathological problems."

The Webber Hospital in Duluth, which has been erected at a cost of $200,000, will be ready for occupancy this month. The present staff includes Dr. E. E. Webber, Dr. H. S. Woodruff, Dr. Samuel Litman, Dr. Arnold Swenson, Dr. O. L. McHaffie and Dr. Paul Swenson.

Dr. S. Marx White of Minneapolis was recently elected second vice president of the American College of Surgeons at their annual meeting held in Cleveland in February. Dr. Charles Smithies of Chicago was elected president, with Dr. Charles Martin of Montreal as president-elect.

Dr. Alfred Owre, dean of the college of dentistry at the University of Minnesota since 1905, and a member of the dentistry faculty since 1893, will go to Columbia university July 1 to become dean of the school of dental and oral surgery in the new Columbia medical center in New York City.

Dr. A. Gullixson, Albert Lea, was elected president of the Freeborn County Medical Society at their annual meeting held in December 1926. Other officers elected were Dr. F. W. Calhoun, Albert Lea, vice president; Dr. P. M. Gamble, Albert Lea, secretary, and Dr. E. O. Vollum, Albert Lea, treasurer.

The American Hospital Association will hold its 1927 annual convention, October 10, in Minneapolis, it was recently announced. William F. Kunze of Minneapolis, president of the board of public welfare, has been appointed chairman of the Minneapolis citizens' committee in charge of convention arrangements.

The formal dedication of the new Fort Snelling Veterans Bureau hospital will be held April 19. The dedication address will be given by Frank T. Hines, director of the United States Veterans Bureau. Dr. H. B. Fralic, chief medical officer in charge of the hospital, is chairman of the dedication committee.

Dr. Horatio B. Sweetser, Sr., was recently elected president of the Minneapolis Surgical Society at their annual meeting. Dr. Sweetser succeeds Dr. Emil C. Robitshek. Dr. Willard D. White was elected vice president to succeed Dr. Stanley R. Maxeiner, and Dr. Theodore Sweetser was re-elected secretary-treasurer.

Dr. B. F. Smith, assistant superintendent of the St. Peter hospital for the insane for the last five years, has been appointed superintendent of the Willmar state asylum for the insane. He will succeed Dr. George T. Baskett, who recently took up his duties as superintendent of the hospital for the insane at Wilkesbarre, Pa.

Dr. W. B. Kelly of Aitkin was elected president of the Upper Mississippi Medical Society at the annual meeting held in Brainerd last month. Other officers are Dr. G. H. Garlock, Bemidji, first vice president; Dr. F. W. Van Valkenburg, Long Prairie, second vice president; Dr. Mary Ghostley, International Falls, third vice president; Dr. G. I. Badeaux, Brainerd, secretary-treasurer.

The public welfare board, Minneapolis, has approved recommendations of Dr. Walter E. List, superintendent at General hospital, advancing Dr. M. Nathanson from assistant to associate on the medical staff. Additions to the hospital staff announced were Dr. Gerald Koepcke as assistant in the eye, ear, nose and throat department, and Dr. J. Polcak as assistant in obstetrics and gynecology.

The Minnesota Society of Internal Medicine offers $250.00 cash for the best thesis received before January 1, 1928, by any "practicing physician, exclusive of members in this Society, in the State of Minnesota who has been deemed most worthy to receive a prize in research in clinical medicine." Information may be obtained by writing to the Secretary, Dr. E. L. Gardner, 610 Yeates Building, Minneapolis, Minn.

Dr. R. C. Logefeil of Minneapolis has returned from Europe, where he has been since last summer. Dr. Logefeil visited the various clinical centers on the continent as well as in England and the Scandinavian countries. He spent most of his time in Vienna, where he found post graduate work to be most thoroughly organized. He has resumed his practice at the Sivertsen Clinic in the department of internal medicine.

Dr. Karl W. Doege of Marshfield, Wis., was elected to succeed Dr. Arthur A. Law as president of the Soo Line surgeons at their eighteenth annual meeting held at the Radisson hotel, Minneapolis, Friday and Saturday, February 25 and 26. Dr. David J. Twohig of Fond du Lac, Wis., was elected vice president to succeed Dr. David V. Meiklejohn, also of Fond du Lac, and Dr. John H. Rishmiller, Minneapolis, was re-elected secretary-treasurer. Winnipeg was selected as the place of the next annual meeting.

"Demonstration of a method for taking repeated aortic blood pressure readings in laboratory animals" was the subject of a paper given before the Minnesota Pathological Society at their meeting Tuesday, February 15, by Dr. Leone McGregor. Dr. A. H. Pedersen read a paper on "Method of producing experimental chronic hypertension in the rabbit." Dr. Donald McCarthy reported a case of Henoch's purpura and Dr. M. H. Nathanson presented the subject "Electrocardiographic observations in diphtheria heart."

Word has been received that Dr. and Mrs. C. B. Buswell, formerly of Minneapolis, are among the missionary refugees who arrived safely in Shanghai recently. Dr. Buswell is a former resident of Minneapolis and a graduate of the medical school of the University of Minnesota. He has been a medical missionary at Kuling for the Presbyterian church for the last two years and has been in charge of the Presbyterian hospital. Kuling, situated in the mountains beyond the Yangtse river, is a summer resort for missionaries in central China.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

JOINT SOCIETY MEETING

Dr. Allen K. Krause, Director of Tuberculosis at Johns Hopkins University, will visit the Twin Cities and other points in the state this month at the invitation of the Medical Staff of the Lymanhurst hospital.

DR. KRAUSE

Dr. Krause is editor of the American Review of Tuberculosis; American editor of "Tubercle"; author of numerous books among which are "Rest and Other Things," "Environment and Resistance in Tuberculosis," "The Anatomical Structure of Tubercle From Histogenesis to Cavity." He is also author of a large number of articles which have appeared in various American and foreign medical journals.

On Monday evening, April 4, 1927, in the Ballroom of the Nicollet Hotel, Minneapolis, at 6:30 o'clock, Dr. Krause will be the orator of the evening at the annual banquet of the Lymanhurst Medical Staff which is being held in his honor. Among the different organizations coöperating with the Lymanhurst medical staff in giving this banquet are: the Hennepin County Medical Society, the Minnesota State Public Health Association, the Minnesota Trudeau Medical Society, and the Hennepin County Tuberculosis Association. Dr. Krause's subject, "The Trend of the Medical and Surgical Aspects in Pulmonary Tuberculosis," will be the outstanding address of his series.

Dr. Krause will also deliver the following addresses:

Tuesday, April 5, at 4:30 p. m. Address before the Graduate School, student-body and faculty, University of Minnesota, University campus.

Tuesday, April 5, 8:00 p. m. Annual address of the Alpha Omega Alpha—"Landmarks from Laennec to Trudeau," in the Anatomy amphitheater, University of Minnesota Medical School.

Wednesday, April 6, at 12:30 p. m. Address before the Open Forum of the St. Paul Association at the Saint Paul Athletic Club.

Thursday, April 7, at 8:00 p. m. Mayo Foundation lecture at Rochester, Minnesota.

Friday, April 8. Address before the Medical School student-body at the University of Minnesota.

Saturday, April 9. Address before various organizations in Duluth.

SPECIAL TRAINS TO A. M. A. MEETING

The Illinois State Medical Society is running a special train to Washington, D. C., over the Pennsylvania Railroad for the A. M. A. meeting in May. The Illinois Society has extended an invitation to all physicians in Minnesota, who will attend the convention, to make reservations on this special train, which will accommodate members of the profession from Illinois as well as the states north and west.

The following schedule will be effective on the dates specified:

PENNSYLVANIA RAILROAD

Lv. Chicago	1:00 p. m.	May 15-16
Ar. Washington	9:00 a. m.	May 16-17

Additional special car service on the LIBERTY LIMITED, May 14th and 17th, and the PENNSYLVANIA LIMITED, May 14th, 15th, 16th and 17th.

Liberty Limited	*Pennsylvania Limited*
Lv. Chicago 1:00 p. m.	Lv. Chicago 5:30 p. m.
Ar. Washington 9:00 a. m.	Ar. Washington 4:20 p. m.

Address inquiries and reservation requests to Mr. W. E. Blachley, Division Passenger Agent, Room 524, Union Station, Chicago.

STATE MEDICAL MEETING

Duluth, June 30, July 1, 2, 1927.

The Program Committee for the 1927 meeting of the Minnesota State Medical Association has announced a tentative program which includes such prominent speakers as—

Dr. I. A. Abt of Chicago.

Dr. P. M. Hickey, Professor of Roentgenology, University of Michigan.

Dr. J. O. Polak, Professor of Obstetrics and Gynecology, Long Island College Hospital.

Dr. M. L. Harris of Chicago.

Dr. F. D. Dickson of Kansas City.

Dr. Harry E. Mock of Chicago.

Dr. C. H. Mayo of Rochester.

Dr. Ralph H. Major of Kansas City.

Dr. W. S. Middleton of the University of Wisconsin.

The program will consist of joint meetings with papers and symposiums on—

Immunization and Acute Infectious Diseases,
Pulmonary Tuberculosis,
Gallbladder and Liver,
Gynecology,
Gastro-Intestinal Tract,
Heart.

Clinics will be held on—

The Circulatory System,
Neurological Diseases,
Skin Diseases,
Pediatrics,
X-ray Plates and
Internal medicine.

The Medical Economics Meeting will be of unusual interest as Dr. M. L. Harris of Chicago, for many years chairman of the A. M. A. Committee on Contract Practice, will be the principal speaker, with Miss B. C. Keller, Director of Lay Education of the Illinois State Medical Association, and Dr. H. M. Johnson, who will speak on Legislation.

MINNEAPOLIS SURGICAL SOCIETY

The regular monthly meeting of the Minneapolis Surgical Society will be held Thursday, April 7, at 8:00 p. m., in the library of the Hennepin County Medical Society, Donaldson Building, Minneapolis. The following program will be presented:

1. Stones in the bile ducts, with report of a strange case—Dr. J. Frank Corbett.
2. Empyema, a series of cases with demonstration of method of treatment—Dr. James M. Hayes.
3. Acute suppurative appendicitis with some factors in mortality—Dr. Ivar Sivertsen.

Members of the medical profession are cordially invited to attend.

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Members of the West Central Minnesota Medical Society met at Wheaton, February 19, 1927, when they were the guests of Dr. C. F. Ewing at a six o'clock dinner. The ladies were entertained at a basketball game while the doctors held their scientific program, which included the following papers:

Pneumonia in Children, Dr. C. M. Pierson, Wheaton.

Cholecystitis, Dr. A. L. Lindberg, Wheaton.

Talk on Fee Bills, Dr. B. V. Bates, Browns Valley.

A general discussion followed the reading of the papers.

The next meeting will be held at Starbuck, Minn., April 30. At this meeting the Society will be the guests of Drs. C. R. Christenson, O. V. Opheim, L. L. Gibbon and H. Linde.

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Dinner at United States Veterans Hospital No. 101, St. Cloud, at which Dr. H. Hansen acted as host, opened the monthly meeting of the Stearns-Benton County Medical Society held February 23.

After the dinner hour the evening was devoted to the following program:

1. "Postoperative Insanity," Dr. C. B. Lewis, St. Cloud.
   Discussion, Dr. H. Hansen and Dr. Geo. Rice.
2. "Present Status of Scarlet Fever," W. B. Richards, St. Cloud.
   Discussion, Dr. H. Clark, St. Cloud.
3. "General Paresis," Dr. Geo. Rice, St. Cloud.
   Discussion, Dr. Blackmore.

Dr. I. J. Christison and Dr. F. J. Savage talked on the proposed basic Science Law.

ALL BUSY

The mother was ill in a home where a radio had recently been installed. The doctor came and small Emily looked on wonderingly as he used the stethoscope. "What station is he trying to get, mother?" she asked, when she could no longer contain her curosity. —Capper's Weekly.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of January 12, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 12, 1927, at 8 p. m. Dinner was served at 7 p. m.

The meeting was called to order by the President, Dr. F. E. Burch. There were 32 members and 1 visitor present.

Dr. John F. Fulton read the following resolutions, written by Dr. Burch, upon the death of Dr. William R. Murray, which occurred on December 27, 1926:

"It is with sincerest regret and sorrow that I record for this Academy the death of one of our Fellows, Dr. William R. Murray.

"Although a comparatively recent fellow of the Minnesota Academy of Medicine, William Murray was a valued and interested participant in its monthly gatherings. Retiring and reticent by nature, he nevertheless loved his professional associations; when he came to this Academy, he enjoyed the social contacts as much as the scientific benefits which characterize our meetings. Silent by nature, he was a lovable companion and a man whom all esteemed.

"Dr. Murray always remained true to his professional ideals, which were of the highest. He commanded the respect of his associates, especially of those who practiced in his own special field, and of his colleagues at the University. Integrity, fairness in judgment of others, sincerity in his motives made us honor and admire him. As a consultant he was esteemed for his quiet, unobtrusive analysis of a problem; his advice was always sound, and tempered with conservative good judgment.

"His tragic death marks one of the unfortunate accidents of surgery. His premature passing means a distinct loss to the profession and to this Academy. Therefore, be it

"Resolved, That the Minnesota Academy of Medicine express to Mrs. Murray, and her sons and daughter, its appreciation of him as a colleague and Fellow of this Academy, our sincerest regret in the loss we share with them and our deepest sympathy in their hour of sorrow."

The scientific program of the evening consisted of two papers.

Prof. C. M. Jackson gave a talk, which was illustrated with numerous lantern slides and charts, entitled "The Physique of Minnesota University Students —a Study in Constitutional Anatomy and Physiology."

DISCUSSION

Dr. A. Schwyzer (St. Paul): I rise to thank Prof. Jackson for the paper he has brought before us. He compared the Scandinavian and German average and this brought back to my mind an article I read about 10 years ago in the Swiss Medical Journal, when the war was in full swing in Europe; an article by an an-

thropologist who tried to show that there was little reason to speak of a war of raees against eaeh other, and of the hatred of the *races*. He showed that in Europe anthropology ean make out three different raees: First, a Northern European raee—the "Reiengraebermenseh"—*i.e.*, the type whieh was found in the North where the bodies were buried in rows. Only in two distriets eould this raee be found preserved today in a more or less elear type, *i.e.*, in some southern parts of the Scandinavian peninsula and in some southwestern districts of England. They were outspokenly doliehoeephalies, of a very tall build, long and heavy bones, light hair and blue eyes. Then comes the middle European type or typus Alpinus, very stocky, with strong bones, as in the former type, but of less height. In this raee the heads were broad, whieh formed the most characteristie feature. The third type was the home mediterraneus, with less height than the two others, eonsiderably more slender bones and again long skulls. This author eame to the conclusion that we eould not talk of a real anthropological differenee of raees today when eonsidering the different western European peoples, beeause they are so mixed. When you eonsider, for instanee, that the Allemanns with strong heavy bones and doliehoeephalic heads, whieh is the type of head of the northern European raee, are the southermost of the Germanie peoples, it beeomes elear that the Germans as a whole are very mixed. Tfie average German today is probably a mixture of the northern European type and the typus Alpinus. The Seandinavians, with the exeeption mentioned, are also mixed.

This coineides with what Prof. Jackson found in his studies, that there are very small anatomie differences between the two nationalities.

These studies are interesting. We have learned with interest tonight that the bodily well-developed fellows are usually eorrespondingly well-developed mentally.

Dr. R. E. Scammon gave a lantern slide talk entitled, "The Growth History of the Human Heart."

DISCUSSION

Dr. F. W. Schlutz (Minneapolis): We all probably have the same impression about the work presented by the last speaker and the one preceding him. I marvel at the accurate and splendid analysis to whieh the subjeet has been put by both Dr. Scammon and Dr. Jackson. I doubt whether many of us realized that an anatomical subjeet eould be so usefully applied to the clinieal field of medieine. With just a little reflection one ean readily see how easily this type of researeh ean lend itself to investigation in the elinieal field both in normal and abnormal states. This is not only true of ehildren but is equally true of the adult. I don't think that anatomical data have generally been treated this way before. We are fortunate in having this type of work going on at the University of Minnesota. Most of us, I believe, had the feeling that researeh in anatomy had definite limitations. Dr. Scammon and Dr. Jackson have presented things which open up an entirely new and almost unexplored field that seemingly offers exeeptional opportunities for new researeh and establishes a meehanism by which many elinical phenomena ean be aeeurately measured and more eompletely understood.

Dr. Farr (Minneapolis): There was one point I wanted to ask Dr. Seammon. It occurred to me that the baby during the first month or so does not exereise very mueh and I wondered what effeet this had on the growth of the heart; would that influenee the slower growth at that time?

Dr. Scammon: I do not think we have any direet evidence of that. The baby eertainly exereises as mueh then as in utero and, as was shown in the eharts, the upward turn of the eurve eomes just about the time that the body weight eatches up to the proportionate heart weight.

The President expressed the appreciation of the members of the Aeademy to Drs. Jaekson and Seammon for presenting these very interesting studies.

The meeting adjourned.

Carl B. Drake, M.D.,
Seeretary.

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of February 3, 1927

The regular monthly meeting was ealled to order by Dr. E. C. Robitshek, President. In the absenee of Dr. A. C. Straehauer, who had arranged the program, the elinical program was eondueted by Dr. James A. Johnson. All the patients present were patients of the University Hospital and Cancer Institute.

A series of five eases of eaneer of the reetum was presented by Dr. O. J. Campbell. Three of them had been treated by Dr. A. C. Strachauer by the Coffey method and were apparently well after periods up to about three years. The fourth ease had just entered the hospital for operation, having an annular earcinoma of the rectum without any apparent extension into the surrounding tissues. The fifth case had refused eolostomy and had been treated elsewhere about four years ago by proetectomy from below. He is now in the hospital, being treated with *x*-ray and radium for a reeurrence. Colostomy has been performed of necessity. Dr. Campbell discussed the various types of operation for eaneer of the reetum and reviewed the results of the Coffey operation as performed thus far at the University Hospital.

Dr. Owen Wangensteen reported a series of sixteen cases of goiter of various types and diseussed the diagnosis, treatment and prognosis. The eases were very interestingly grouped and eompared.

Dr. James A. Johnson presented a ease of ossifying arthritis. The patient's trouble began in his knee in 1920; a diagnosis of tubereulosis was made and he was kept in a east for six months. Later the east was extended to inelude his spine when pain appeared there.

He has been in bed continuously since 1922 and was in a sanatorium in bed for three years. He has a complete bony ankylosis of both knees, both hip joints and his spine. Since coming here it is felt that tuberculosis is not the underlying cause and he has been treated by arthroplasty of first the right hip and then the left hip. The difficulties of postoperative treatment have been great on account of the other ankylosed joints but good progress has been made thus far.

A series of cases of cancer of the lip, mouth, and face was presented by Dr. James A. Johnson, the discussion covering the principles of treatment of the cancer and subsequent repair of the deformities, especially those left by the removal of a cancer of the antrum.

A series of cases of benign and malignant tumors of the breast was presented by Dr. Campbell, with a discussion of bilateral tumors of the breast and the differentiation between benign and malignant growths.

Two cases of undescended testicle were presented by Dr. Wangensteen with a discussion of the normal growth of the testicle from birth to puberty, a discussion of the technic preferred for operation, and an emphasis on the importance of performing the operation, if possible, before the age of puberty.

A short discussion of the principles of treatment with radium emanation and deep *x*-ray was given at the end of the meeting by Dr. William Senstrom, who thereafter demonstrated the preparation of radium emanation.

THEODORE H. SWEETSER, M.D.

As to how boldly or definitely we may speak of caseation clearing from *x*-ray plates, I am not prepared to say any more than that I am sure that we are yet capable of rendering a roentgenological verdict of caseation (in all its pathological stages) in all cases that are photographed. As one who is not a roentgenologist, I often wonder how the more expert can always be so sure that the shadows they may be observing are caseation and not pneumonia. I have an impression that, in tuberculosis at any rate, caseation and pneumonia can look very much alike to the *x*-ray. There can be no more common anatomic changes in pulmonary tuberculosis than pneumonic ones, of varying stage and extent. And I have an idea that many of these are frequently called the shadows of caseation. This is a point that we must ask for more information on. If the clinician and roentgenologist ask the pathologist for his opinion on the subject under discussion, he would therefore be inclined to reply that he should expect much—very much—tuberculosis of a pneumonic nature to gradually fade out of the picture, as well as perhaps some caseous pneumonia that had not advanced far, but that it would be difficult for him to conceive of a restoration to normal in lung tissue that had once been the site of caseation that had gone on to disintegration and loss of tissue. I am speaking now, as I have in this whole discussion, of grossly visible effects only. Allen K. Krause. *Trans. Am. Climatological and Chemical Assn.*, 40, 184 (1924).

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

ACUTE PANCREATITIS: Digby Chamberlain. (British Journal Surg., 1927, XIV, 390-396.) Acute pancreatitis is the most acute, agonizing, and one of the most fatal conditions which we are called upon to treat inside the abdomen. It is usually not diagnosed because the condition is not kept in mind. In regard to the symptoms, their severity and acuteness of onset should be emphasized. Two signs are of especial interest, first the marked cyanosis, and second, the discoloration in the flank due to a direct retroperitoneal digestion by the pancreatic ferments.

It is an uncommon disease, occurring once in about 5,000 surgical admissons. The average age in 21 cases reported was fifty; and the mortality was thirty-eight per cent. Thirteen cases were treated by drainage of the lesser sac; in five of these a tube was also placed in the gall-bladder and in these latter cases the mortality rate was considerably lower than in the former. The author suggests a method of posterior drainage by resecting a portion of the tenth rib on the left.

Some of the sequelæ observed in patients who have recovered are fistulæ, cysts and a certain amount of indigestion.

In four cases the bile was examined and in all of them a hemolytic streptococcus was present. No inflammation exists in the common ducts in these cases and after a consideration of the anatomy of the pancreatic and biliary ducts and their variations, the author concludes that, if the origin of the infection is in the gall-bladder, as he believes it to be, then it reaches the pancreas by way of the lymphatics. He concludes that the treatment is surgical and should include drainage of the gall-bladder in addition to drainage of the lesser sac.

HAROLD E. SIMON, M.D.

TOTAL REMOVAL OF THE BLADDER FOR MALIGNANT TUMORS: (Sur la question de l'ablation totale de la vessie dans les cas de tumeurs malignes) S. P. Fedoroff (Journ. D'urologie 1926, 22, 370-378). The treatment of bladder tumors, especially the malignant types, is rather unsatisfactory at present. There are a certain number of satisfactory results in any group of cases but these are lost sight of in the large group of patients who die a few months or a few years after operation.

The logical treatment in cancer of the bladder, as in cancer elsewhere, consists in the removal of the entire bladder as soon as possible after the onset of the disease. Cystectomy is neither a very complicated nor a very dangerous operation if one operates in two stages. The first stage consists of transplantation of the ureters and the second stage, several weeks later, consists in the removal of the bladder.

In eleven of the twelve cases reported by the author, the ureters were transplanted into the sigmoid. In one case they were transplanted into the anterior abdominal wall. Two patients died from pyelitis, one from peritonitis, two from accidental causes before the second stage of the operation was performed and two died as a result of generalization of the cancer. These were all advanced cases.

The most serious postoperative complication is pyelonephritis and this is especially to be feared when the ureters are transplanted into the intestines. However, this site is greatly to be preferred for the transplantation because of the convenience for the patient. Schmiden, in order to protect the kidneys from ascending pyelitis, proposes to isolate a segment of the large intestine and later transplant the ureters into it. One cannot judge the merits of such an operation until after many years of observation.

The second most common cause of death is recurrences and metastasis which may be avoided by earlier operations. The author believes that the more radical type of operation should be performed in the early cases, because resection of the tumor alone has not given satisfactory results. Certain difficulties present themselves, namely difficulty in diagnosis, even microscopically. Then the surgeon must decide whether to remove the tumor only or the entire bladder. However, there is, during the last year, not much doubt when any other abdominal organ is involved and the author favors cystectomy in all cases, because it offers greater freedom from recurrences. In his series the incidence of pyelonephritis is rather high even in the patients who recovered.

HAROLD E. SIMON, M.D.

PLACENTA PRÆVIA—A STUDY OF 165 CASES: Geo. L. Broadhead and Edwin G. Langrock. (Surg., Gyn. & Obst., Jan. 1927, XLIV, 39-42.) There are three types of placenta prævia: the central type, which covers the entire internal os at the time of full dilatation; the marginal type, in which the margin of the placenta is felt at the internal os when the cervix is incompletely dilated; and the lateral type, in which the edge of the placenta may be felt at the internal os, when the cervix is completely or almost completely dilated.

When the cervix is incompletely dilated it is sometimes difficult to accurately diagnose these types.

The treatment depends upon a number of variable factors. When the cervix is sufficiently dilated to admit the hand, version is usually the best operation in both primiparæ and multiparæ with lateral or marginal placenta prævia. When there is little dilatation the modified Ribes bag is superior to packing. The forceps operation is used in any type of placenta prævia when the vertex is in the pelvis and the cervix is almost, if not fully, dilated. Manual dilatation of the cervix is a frequent cause of laceration and should be condemned.

In all primiparæ, at or near term, with central placenta prævia and undilated cervix, cæsarian section offers the best results. This is also true in multiparæ at term with central placenta prævia when the patient elects to take a slight additional risk to obtain a living child.

Debatable cases include patients pregnant from seven to nine months having a cervical dilatation of two to three fingers and who are in poor condition from loss of blood. The mortality is high in this group and cæsarian section may be the operation of choice.

Packing of the uterus and vagina with iodoform gauze and transfusions should be employed as adjuncts when indicated.

HAROLD E. SIMON, M.D.

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS: Arthur C. Strachauer, Minneapolis, Minnesota. (Annals of Surgery, 1927, Vol. LXXXV, 67-72.) The pylorus of the normal infant is a soft pliable structure and the pyloric circular muscle up to three months of age measures not more than 2.5 mms. In congenital hypertrophic pyloric stenosis the pyloric region is occupied by a sharply defined tumor mass of unknown etiology, measuring from ⅞ to 1¼ inches in length and from ⅝ to ¾ of an inch in diameter. It is of a firm, almost cartilaginous consistency and is composed of a massive hypertrophy of the circular musculature of the pyloris. In these cases the pyloric canal becomes stenosed and the outlet of the stomach obstructed. The lesion has been observed in a seven months fetus and in the still-born, hence congenital.

As a result a striking clinical picture is presented, of explosive, projectile vomiting after each meal, the stools become absent or meconium-like; the urine becomes scanty, and dehydration and acidosis rapidly develop.

Because the liver is relatively large in infants the tumor is not palpable through the abdomen and even at operation can only be felt by hooking the finger up under the liver. The roentgen-ray examination has not been found helpful nor necessary.

In a series of 48 cases, all were males except two. The majority appeared well developed at birth, the symptoms beginning at the end of the second week and becoming alarming about the third week.

Adequate pre-operative preparation is absolutely essential to success and is especially urgent in the late cases. This consists in gastric lavage and the administration of fluids per rectum and under the skin.

Various types of operations have been practiced in the surgical treatment but the Rammstedt operation has become the standard and safest procedure. The operation is performed through a short upper right rectus incision, the tumor is delivered and a longitudinal incision is made through an avascular region down to and exposing the pearly white mucosa. A free portion of omentum is sutured to the upper margin of the region to prevent adhesions to the liver.

Careful attention is given to hemostasis, to reduction in the length of time consumed in the operation, and to keeping the child warm and carefully covered. The mortality rate in the series of 48 cases reported by the author was only two per cent.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

PROGRESS IN PEDIATRICS—HELIOTHERAPY AND ACTINOTHERAPY IN RELATION TO PEDIATRICS: Frederic W. Schlutz, M.D. (Amer. Jour. of Diseases of Children, January 1927.) Raczysky states: "It is the sun which plays the principal rôle in the etiology of rickets."

Huldschinsky states: "The therapeutic effect of quartz light irradiation is invariably apparent in all forms of rickets. Recovery results more promptly than with any of the methods employed heretofore. The effects of irradiation are lasting and the regenerative process is active for at least two months after interruption of the treatment."

Rats irradiated with the mercury-vapor quartz lamp grow at the normal rate for from four to five weeks after being placed on a diet deficient in the fat-soluble vitamin. Very slight or only temporary improvement is noted when rats which have ceased to grow as a result of fat-soluble vitamin deficiency are irradiated. Radiation is thus no substitute for the vitamin, but in some way economizes it in its action.

Before treating rickets with quartz lamp therapy, the inorganic phosphorus content of the blood serum was from 2.7 to 3.2 mg. per hundred cubic centimeters. These figures gradually increased to a maximum of 7 mg. under treatment.

The author concludes that the active rays are ultraviolet rays situated between 400 and about 280 millimicrons.

Orr, Holt, Wilkins and Boone (1923) carried out a series of metabolic studies on rachitic infants. These infants failed to retain calcium and phosphorus, although there was a sufficient amount in the diet. Under ultraviolet therapy the retention of these elements and the amounts of calcium and phosphorus found in the urine are increased, indicating an increased absorption from the intestine. They argue that defective absorption from the intestine in active rickets is the cause of the low calcium and phosphorus found in the blood serum. This is, then, the ultimate cause of the defective calcification of the bones.

Fisher (1923) states: "As a result of our investigation, we believe that in the management of rickets every known therapeutic agent should be made use of. The best results are obtained under a treatment combining proper food, cod liver oil and exposure to sunlight."

Armand-Delille (1923) considers sunlight the best preventive and curative measure for rickets.

Irradiated air has no therapeutic value in treating rickets in chickens. Steenbock and Nelson (1924) found that rats, fed a rickets-producing ration which had been irradiated, were definitely protected against rickets.

R. N. ANDREWS, M.D.

CUTANEOUS ADMINISTRATION OF COD LIVER OIL: Joseph Garland, M.D. (Amer. Jour. of Diseases of Children, December, 1926.) The value of cod liver oil in preventing and in curing rickets has been heralded with extreme enthusiasm during the past few years, and recent literature has been filled with reports of investigations concerning its action, and concerning its apparently close relationship to the action of ultraviolet irradiation. As might be expected, the interchangeability of cod liver oil and ultraviolet therapy has been overrated.

Infants receiving apparently sufficient doses of cod liver oil will develop rickets in almost as high a percentage of cases as will those not so treated. The value of the oil seems to be one of control rather than of prevention, the infants receiving it manifesting rickets healed earlier than the infants of the control series.

The oral administration of cod liver oil seems to have been the method almost exclusively employed. Soames, however, injected it intraperitoneally into rats and found that partial protection was afforded against the diet producing rickets. He concluded that the site of action of cod liver oil is not limited to the intestinal tract.

Since the importance of the skin as an independent organ of assimilation is becoming better recognized, it seemed logical to determine, if possible, whether or not the results commonly attributed to cod liver oil could be obtained by its cutaneous administration, namely, the raising of a lowered blood phosphorus concentration to its normal value.

Gauze pads, saturated with 1 tablespoonful of oil, were applied to the abdomens of these infants and were held in place with flannel binders. These pads were

renewed daily during the course of the experiments.

The experiments had to do solely with the calcium and phosphorus plasma values.

Of eleven patients treated all but one showed a marked rise in the inorganic phosphorus in from two to three weeks of treatment. Of four untreated control cases, two showed a rise in the phosphorus to approximately the normal value within two weeks, and two, observed for twenty-seven and thirty-five days, respectively, showed no improvement in this respect.

The influence of cod liver oil on blood phosphorus concentration is still a matter of investigation and has not yet been thoroughly cleared up. If this influence is actual, it would seem that cod liver oil absorbed through the skin is capable of exerting it.

R. N. Andrews, M.D.

DUODENAL ULCERS IN CHILDREN: Lloyd B. Dickey, M.D. (Amer. Jour. of Diseases of Children, December, 1926.) From the cases reported in the literature, it is evident that epigastric pain is a common, if not the most common, symptom and complaint of peptic ulcer in children. Some abdominal discomfort is practically always present. The pains are usually, but not always, related to meals, and are relieved by food. Pains during the night are frequent.

Nausea and vomiting are common complaints. The most important single factor in the diagnosis is the realization that chronic peptic ulcer occurs in children. In those subjected to roentgenograms, lesions near the pylorus were noted.

All of the patients were remarkably relieved on a diet for patients with ulcer. If a careful investigation of chronic abdominal complaints in children is made, which included roentgenologic studies, it is probable that the incidence of chronic peptic ulcer in children will be found to be greater than has hitherto been believed, and that these patients may be easily relieved of rather distressing symptoms.

R. N. Andrews, M.D.

TOYS AS PEDIATRIC ARMAMENTARIUM: Jacob Sobel, M.D. (Archives of Pediatrics, January, 1927.) Dr. Parry was wont to say: "More important to know what kind of person has a disease than what kind of disease a person has."

The mere presence of toys in your office will often be the means, at least it has been so for the author, of being able to determine the conduct or behavioristic tendencies of the child.

Joco, the animated monkey, is used as an introduction to the child and to gain his attention. Smiling Jim is the author's standby for those children who will not open their mouths despite all pleading. He is made of rubber, and when asking him in the presence of the child, "Show me your tongue," you gently press laterally or anteroposteriorly and the tongue is protruded and little Willie is shown what a good and obedient boy Jim is.

Restless Ann is a weighted toy girl so adjusted that it will not remain in the horizontal position. Like many neurotic children she will not be kept down. The author has used this toy often for this type of children to show them how to remain set and conserve their energy instead of butterfly fashion going from one place to the other—and it has worked. Dolls, of course, always appeal to the little girl.

Animals—dogs, cows, lions, tigers, elephants, horses, ducks, camels, etc.—always attract the child's attention. They serve the purpose mainly of entertainment, it is true, and of giving opportunity to converse with the child and in this way to gain his attention and quiet.

Inspection, almost a lost art in medicine today, is most helpful in childhood.

There is nothing more worth while in the whole field of child training than the formation of good habits. The pre-school age is the most plastic, most sensitive, and most impressionable period of life. Improper care at this time may mean a life of discomfort, nonresistance and disease.

R. N. Andrews, M.D.

ROENTGENOLOGY

SUPERVISORS:
LEO G. RIGLER,
MPLS. GEN'L HOSPITAL, MINNEAPOLIS
A. U. DESJARDINS,
MAYO CLINIC, ROCHESTER

IRRADIATION OF VESICAL NEOPLASMS BY REMOVABLE PLATINUM RADON SEEDS: DESCRIPTION OF NEW INSTRUMENTS DESIGNED TO FACILITATE THEIR EMPLOYMENT: Joseph Muir. (Jour. Urology, January, 1927, XVII, p. 53.) An improved method of treating neoplasms of the bladder by means of Removable Platinum Radon Seeds is described in this article.

Using the Removable Platinum Radon Seed it is possible to obtain scientific accuracy of the dosage delivered. Radiation is directed not only to the growth itself, but to the tissue surrounding it, in order to catch the mitotic cell. The placement of the radioactive units is made so that the "zones of potential tissue change" from each source do not overlap. The "zone of potential tissue change," or the amount of tissue that one seed can take care of when implanted alone and also when two or three centers are used so that intervening cells are subjected to cross firing, is described. The theoretical exposé has been proved by clinical results.

Using the Removable Platinum Radon Seed, not only are we able to deliver accurate dosage, but because of the platinum screenage all caustic rays are eliminated and necrosis and sloughing with intense shock to the patient obviated. The fact that Platinum Radon Seeds are easily removed through the cystoscope after the required amount of radiation has been delivered makes this the method of choice since no foreign body is left in tissue after treatment.

The technic of application is fully described and illustrated. A point of great importance in using the Re-

movable Platinum Radon Seeds is that after the first seed has been implanted through the cystoscope, its thread protruding from the portal of entry of the seed in tissue serves as a landmark and guide for the placement of successive seeds, so that the accuracy of placement of seeds through the cystoscope is greatly increased. Also, should a seed be incorrectly implanted, it may be removed and reimplanted.

In view of the highly simplified technic as described, the treatment of vesical neoplasms by implantation of Removable Platinum Radon Seeds can be accomplished with as much scientific accuracy as any other urologic procedure.

RADIOLOGICAL EXPLORATION WITH IODIZED OIL: Sicard & Forestier (Brit. J. of Radiology, July, 1926). The authors briefly discuss the history of iodized oil, the nature of the substance, its action and manner of elimination, and show how lipiodol has enlarged the field of roentgenological exploration. They have been able to explore with much practical benefit numerous spaces or cavities which could not be objectively explored before: bronchial tubes, epidural and subarachnoid spaces, cavities of cold abscesses. The shape of several organs may be traced with lipiodol, as shown by work with the uterine cavity and fallopian tubes, seminal vesicles and vas deferens, male urethra, and lachrymal ducts. Intravenous or intra-arterial injections are possible. The use of a dilution of lipiodol in olive oil, called light lipiodol, allows the exploration of the cerebral ventricles through lumbar puncture.

The use of the oil is considered to be quite harmless. Out of over 5,000 injections made by the authors, they have had no untoward complications.

WALTER H. UDE, M.D.

ROENTGEN-RAY THERAPY IN ERYSIPELAS: Platou and Rigler (Arch. Med., November 1926). The literature is briefly reviewed, and a representative group of cases treated by this method at the Minneapolis General Hospital is reported. Uniformly good results have been obtained. These cases all responded by a temperature drop to normal within 24 hours after the treatment, with a rapid amelioration of the local and systemic manifestations. The most effective dose was found to be that corresponding to a mild erythema produced through a filter of 2 mm. of aluminum, on a 7 inch spark gap setting. A comparison is made with the results obtained by other methods of treatment.

WALTER H. UDE, M.D.

PRIMARY CHONDROMA OF THE LUNG: Hickey and Simpson (Acta Radiologica—15: XII 1926). Two cases of primary chondroma of the lung are reported, with a roentgenological and pathological study. The literature is also reviewed and the data of thirty-eight similar cases from previous reports are presented.

These tumors have never been properly interpreted roentgenographically. The few cases so studied have been diagnosed echinococcus cyst. They should be differentiated from the latter by the absence of clinical manifestations of taenia infestation, and by the lobular, nodular periphery and irregular calcification or ossification of the pulmonary chondromas.

These growths consist usually of many islands of cartilage, imbedded in a network of vascular connective tissue and adipose tissue. Most cases show calcification. The majority of the tumors were located just beneath the pleura, only six of them showing close association with the bronchi. Their origin is probably from displaced bronchial "anlagen," since histologically they contain all the elements which are found in normal bronchi, including calcified cartilage, connective and fat tissue, complex glandular structure, and some even show smooth muscle.

The differentiation from other forms of lung tumor is of practical importance because of the difference in treatment.

WALTER H. UDE, M.D.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

THE TIRED CHILD. Max Seham, M.D., Assistant Professor of Pediatrics, University of Minnesota, and Grete Seham, formerly Professor of Medical Chemistry, University of Minnesota. 342 pages. Illus. Cloth, 2.00. Philadelphia and London: J. B. Lippincott Company, 1926.

PRACTICAL HELPS IN THE STUDY AND THE TREATMENT OF HEAD INJURIES. Adolph M. Hanson, M.D., formerly neurosurgeon to Evacuation Hospital No. 8, American Expeditionary Forces. 91 illustrations. Price $3.00. Boston: Richard G. Badger, Publisher, The Gorham Press. 1925.

In this monograph the author deals in considerable detail with the anatomy of the skull and nervous system. Some very practical aids in the diagnosis of trauma to the central nervous system are emphasized.

The subjects of skull fracture, repair of scalp lacerations and brain injury, including gunshot injury, are dealt with quite extensively.

The treatment of head injuries by the use of plastic surgery is dealt with in a general way only.

To the man doing industrial surgery, and to the general practitioner, this book contains many helpful suggestions.

A PRACTICE OF PHYSIOTHERAPY. C. M. Sampson, M.D. 620 pages. Illus. Cloth, $10.00. St. Louis; C. V. Mosby Company, 1926.

Dr. Sampson has enlarged upon his original volume published by C. V. Mosby in 1923. This last book contains almost again as many illustrations. The chapters on diathermia and quartz light are enlarged and better illustrated. They are particularly instructive and interesting. On the whole, this volume is a definite improvement of the original and is well worth reading.

I still feel that it strikes a note of over-enthusiasm. In my experience the results obtained do not altogether measure up to the expectations one looks for after taking Dr. Sampson's course of lectures or reading his book. However, one interested in physiotherapy can obtain a great deal of help from this volume.

ALBERT E. FLAGSTAD, M.D.

THE MEDICINE MAN. E. C. Dudley, M.D., LL.D. 369 pages. Illus. $3.50. New York: J H. Sears & Co.

This autobiography of a well known medical man, with fifty years of practice to his credit, ex-President of the American Gynecological Society and President Emeritus of Northwestern University Medical School, should have great interest for the medical reader but it does not quite fulfill the expectation. He says: "I can not tell those things which have been and are most vital to me in my personal and professional life. These things are too near me for that, and they involve other people." The result is a rather dry recital of his life, which makes one wish that he might have turned the narrative over to some colleague who would have included more personal details and who would not have been hampered by professional modesty. As it is, it fails to be either an inspiration to others traveling the same path or to give an intimate or vital picture of a man who has accomplished so much in one lifetime.

Two chapters stand out in bright relief from the rest of the book, the one on antiseptic surgery and the last one on "More Worlds to Conquer." The first gives a picture of surgery of a generation ago with surgeons operating in frock coats, ligatures looped in the assistant's buttonhole, in order to be easily accessible to the operator, bystanders' unwashed hands invited to palpate the abdomen, and successful recovery after an abdominal operation the exception rather than the rule. In the last chapter he gives an idea of the changes in the science of medicine within his time and briefly sketches the problems now before the medical man and says, "Now let medicine, fortified by science, make the conquest of the world." The book is well worth reading but fails to do justice to the brilliant and useful life and vivid personality which it attempts to portray.

MARGARET WARWICK, M.D.

MUSCULAR CONTRACTION AND THE REFLEX CONTROL OF MOVEMENT. J. F. Fulton, B.Sc., M.A., Ph.D. (Oxon). 644 pages. Price $10.00. Baltimore: Williams & Wilkins Co., 1927.

This is an extensive and interesting account of this subject and should appeal to a wide variety of readers. It might be described as a critical review of the literature on muscle nerve and coordinated movement. As such it brings into readable and accessible form the work of Sherrington, Adrian, Lucas, Hartree, Hill, Lapique and others, including the author's own extensive contribution on the subject. The author distinguishes throughout what has been proven and what is yet hypothesis.

The book is divided into two parts. The first part is on the contraction of muscle caused by artificial stimuli. The different properties, innervation, etc., of muscle fibers are considered and such problems as the origin of the electrical response, the relation of mechanical to electrical response, summation, tetanus, etc., as well as the nature of the contractile process are well discussed. Most American readers will welcome the clear exposition of Lapique's work on chronaxia.

The second part of the work deals with the control of the nervous system on muscle. This section gives a careful analysis of such subjects as reflexes, inhibition, tonus, lengthening and shortening reaction, reciprocal innervation, and the influence of the cerebellum and higher centers on muscular movement. The chapter on tonus including the discussion of sympathetic innervation as well as Hunter and Royale's work, will be found interesting to many.

The book is well illustrated, many of the illustrations being from the author's own work. A very extensive bibliography will prove a valuable aid to many and also an appendix on apparatus and methods. If one could find any fault with the book it is that extremely little consideration is given to the chemical changes in muscle contraction. A chapter on this subject in which the problems were adequately discussed would be of interest to many.

F. H. SCOTT, M.D.

DISEASES OF WOMEN. Harry Sturgeon Crossen, M.D., F.A.C.S. 6th edition revised and enlarged. 1005 pages. Illus. Cloth, $11.00. St. Louis: C. V. Mosby Co., 1926.

Emphasis throughout is upon diagnosis and treatment, both of which are considered in calculated detail. In progressing through the volume, one is greatly impressed by the indefatigability of the conscientious teacher who uses every artifice of the printer and artist so to guide the student's attention so he will miss no detail of diagnostic procedure. Thus, in palpation, as one of the diagnostic methods applied to abdominal examination, the student is directed to note tension, tenderness, mass, also fluctuation, fluid wave, fat wave, fetal movement, uterine contraction, and friction rub. Each of these items in turn is extensively elaborated: for example, of a mass in the abdomen one must consider its position, size, shape, consistency, tenderness, mobility and attachments. Graduates of recent years will readily recall this feature of Crossen's text by reason of a haunting rhythm in the almost metrical arrangement of the outline.

Diagnosis of the tubal patency by the pneumoperitoneum method is, of course, included. The more recent (1926) use of iodinized oil in X-ray visualization of tubal and uterine cavities is clearly explained.

There is a detailed list of therapeutic measures and agents commonly used in gynecology, together with a discussion of the value, rationale, and dangers (if any) of each.

There is an excellent chapter on diseases of the external genitals and vagina—most useful in differential diagnosis, and as a guide in the treatment of the many diseases to which the parts are subject.

The reader will find the author's text in "Operative Gynecology" a valuable complement to the chapters on

relaxation of the pelvic floor, displacement of the uterus, etc. The author disagrees with an increasing number of writers when he says that "retrodisplacement, as met with in actual work, is rarely without symptoms referable directly or indirectly to it." He says, however, that if there are no symptoms, no treatment is needed.

The extensive recent literature on the use of heat in the treatment of chronic endocervicitis is felt by the author to be still on trial, and receives but slight consideration.

In the chapters on neoplasms, the clear arrangement of the text is an aid in the evaluation of treatment methods.

The chapter on "Pelvic Inflammation" is particularly good in dealing with treatment, which varies markedly according to the type and character and duration of the infection with its attendant reactions—local and general.

The chapter on ovarian tumors is marked by a clarity of expression which characterizes the whole volume.

There is a chapter on "Disturbances of Function" in which are included sterility, leucorrhea, sexual impotence, as well as the usual menstrual disturbances.

Ehrenfest contributes a valuable chapter on the "Internal Secretory Glands in Relation to Gynecology." The nature of the individual glands, and also their reciprocal action, is reviewed with a dispassionate calm that is refreshing to anyone who enjoys a reasonable consistency between known facts on the one hand and exuberant fancy on the other.

E. C. Hartley, M.D.

THE TREATMENT OF FRACTURES, WITH NOTES UPON A FEW COMMON DISLOCATIONS. Charles Locke Scudder, A.B., Ph.D., M.D., F.A.C.S., consulting surgeon to the Massachusetts General Hospital; formerly Assistant Professor of Surgery at the Harvard Medical School; Fellow American Surgical Association; Member of the American Society of Clinical Surgery. Price $12. Philadelphia: Saunders, 1926.

In this most recent, the tenth edition, on the treatment of fractures, the author again presents to the profession what seems the most concise and complete monograph on this subject. The treatment of all fractures is taken up much as in his previous edition. A few of the so-called historical, but obsolete, methods have been omitted.

The author especially emphasizes the frequent use of *x*-ray, for a diagnosis and a guide in the progress of repair in fractures.

A special stress is placed on the first aid, and immediate treatment of all fractures.

Special subjects such as pathological fractures, bone repair, fractures of the mandible and the axilla, birth fractures, together with the subject of massage and anesthesia, are taken up by contributors who are specialists in these various fields.

The author has likewise added much to his previous contributions upon the operative treatment of fractures, and seems less conservative in his views on operative treatment than in his previous edition.

For the general surgeon, or the surgeon doing industrial work, this book is to be highly recommended.

E. A. Regnier, M.D.

FOR SALE—Fracture bed attachable to usual bedstead. Has lift and is complete. Write Mrs. Emelie Seipel, 2324 East 37th Street, Minneapolis, Minn.

WANTED—By ethical dentist, 14 years' experience, location with medical clinic in one of the larger cities in Minnesota outside of St. Paul, Minneapolis or Duluth. Nine years' experience with *x*-ray; 12 years with gas and ether anesthesia. Address C-118, care Minnesota Medicine.

FOR RENT—Office, reception and examining rooms; Dale-Selby double car line. Two druggists, two dentists, no physicians. Reasonable. Dale 7748, St. Paul.

WANTED—Eye, ear, nose and throat man to become associated with a group of physicians. New clinical building. *X*-ray and clinical laboratories, fully equipped. Free office expense until established. Also, wanted—an assistant in general practice and surgery on salary. Address C-120, care Minnesota Medicine.

WANTED—Salaried appointments for Class A physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

DOCTOR WANTED—Scandinavian preferred. Good location. Reasonable rent. Share reception room with dentist. Write C. C. Gerber, 961 Arcade St., St. Paul, or telephone Tower 7340.

PRACTICE FOR SALE—A $6,000.00 cash unopposed practice in town of 500 in Northern Minnesota in Park Region district. Large territory, churches, good school, fine roads, hospital facilities near by. Came here 15 months ago in debt, now going away to specialize. I dispense my own drugs. Am asking $500.00 for drugs and office equipment. Address C-117, care Minnesota Medicine.

CONSTITUTION AND BY-LAWS OF THE MINNESOTA STATE MEDICAL ASSOCIATION*

Adopted in 1926 *And As Amended* To Date.

CONSTITUTION

ARTICLE I—NAME OF THE ASSOCIATON

The name and title of this organization shall be the Minnesota State Medical Association.

ARTICLE II—PURPOSES OF THE ASSOCIATION

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Minnesota and to unite with similar societies of other states to form the American Medical Association; to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; TO PROMOTE PUBLIC HEALTH; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition; and to enlighten and direct public opinion in regard to the great problems of state medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life.

ARTICLE III—COMPONENT SOCIETIES

Component societies shall consist of those county and district medical societies which hold charters from this Association.

ARTICLE IV—COMPOSITION OF THE ASSOCIATION

Section 1. This Association shall consist of Members, Delegates, EMERITUS MEMBERS, and Guests.

Sec. 2. Members. The Members of this Association shall be the members of the component county and district medical societies.

Sec. 3. Delegates. Delegates shall be those members who are elected in accordance with this Constitution and By-Laws to represent their respective component societies in the House of Delegates of this Association.

Sec. 4. EMERITUS MEMBERS. EMERITUS MEMBERS SHALL BE THOSE MEMBERS OF COMPONENT, DISTRICT OR COUNTY MEDICAL SOCIETIES, WHO HAVE HELD SUCH MEMBERSHIP FOR A PERIOD OF 25 YEARS, AND HAVE REACHED THE AGE OF 60 YEARS, OR THROUGH PHYSICAL DISABILITY, ARE UNABLE TO ENGAGE IN ACTIVE PRACTICE, AND WHO, UPON THEIR OWN REQUEST TO THEIR DISTRICT OR COUNTY SOCIETY, SHALL HAVE BEEN DECLARED EMERITUS MEMBERS OF SUCH DISTRICT OR COUNTY SOCIETIES.

Sec. 5. Guests. Any distinguished physician not a resident of this state who is a member of his own State Association may become a guest during an Annual Session on invitation of the officers of this Association, and shall be accorded the privilege of participating in all of the scientific work for that Session.

ARTICLE V—HOUSE OF DELEGATES

The House of Delegates shall be the legislative and business body of the Association, and shall consist of (1) Delegates elected by the component county and district societies, (2) the Councilors, (3) THE PRESIDENT, (4) THE PRESIDENT ELECT, and (5) ex-officio the Secretary AND TREASURER of this Association.

ARTICLE VI—COUNCIL

The Council shall consist of the Councilors, the President, THE PRESIDENT ELECT, and exofficio the Secretary and Treasurer. Besides its duties mentioned in the By-Laws, it shall constitute the Finance Committee of the House of Delegates. A majority of Councilors shall constitute a quorum.

ARTICLE VII—SECTIONS AND DISTRICT SOCIETIES

The House of Delegates may provide for a division of the scientific work of the Association into appropriate Sections, and for the organization of such Councilors District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county and district societies.

DISTRICT COMPONENT SOCIETIES ARE HEREBY DEFINED AS AGGREGATIONS OF MEMBERS OF THIS ASSOCIATION LIVING IN SUCH SPARSELY SETTLED DISTRICTS AS TO MAKE THE ORGANIZATION OF INDIVIDUAL COUNTY MEDICAL SOCIETIES INADVISABLE.

ARTICLE VIII—SESSIONS AND MEETINGS

Section 1. This Association shall hold an Annual Session, during which there shall be held General Meetings, which shall be open to all registered members and guests.

Sec. 2. The general time and place for holding each Annual Session shall be fixed by the House of Delegates, PROVIDED THAT THE EXACT DATE OF THE MEETING MAY BE FIXED BY THE COMMITTEE ON SCIENTIFIC ASSEMLY.

ARTICLE IX—OFFICERS

Section 1. The officers of this Association shall be a President, PRESIDENT ELECT, 2 VICE PRESIDENTS, a Secretary, a Treasurer and a COUNCILOR FOR EACH COUNCILOR DISTRICT.

Sec 2. The officers, except the Councilors, shall be elected annually. The terms of the elected Councilors shall be for three years. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Association shall be elected by the House of Delegates at the second meeting of the House of Delegates at the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years.

ARTICLE X—FUNDS AND EXPENSES

Funds shall be raised by an equal per capita assessment of members. The amount of the assessment shall be fixed by the House of Delegates, but shall not exceed

*All new material is in capitals.

the sum of FIFTEEN DOLLARS ($15.00) per capita per annum except on a two-thirds vote of the Delegates present. Funds may also be raised from the Association's publications, by voluntary contributions, and in other manner approved by the House of Delegates. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for publications, and for such other purposes as will promote the welfare of the profession. All resolutions appropriating funds must be referred to the Finance Committee before action is taken thereon.

ARTICLE XI—REFERENDUM

Section 1. A General Meeting of the Association may, be a two-thirds vote of the members present, order a general referendum on any question pending before the House of Delegates, and when so ordered, the House of Delegates shall submit such question to the members of the Association, who may by mail or in person, and, if the members voting shall comprise a majority of all the members of the Association, a majority of such a vote shall determine the question and be binding on the House of Delegates.

Sec. 2. The House of Delegates may, by a two-thirds vote of its own members, submit any question before it to a general referendum, as provided in the preceding section, and the result shall be binding on the House of Delegates.

ARTICLE XII—THE SEAL

The Association shall have a common Seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII—AMENDMENTS

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the Delegates present at any Annual Session, provided that such amendment shall have been presented in open meeting at a previous session, and that it shall have been published twice during the year in the bulletin or journal of this Association, and sent officially to each component society at least two months before the meeting at which final action is to be taken.

BY-LAWS

CHAPTER I—MEMBERSHIP

Section 1. The name of a physician on the properly certified roster of members of a component society, which has paid its annual assessment, shall be prima facie evidence of membership in this Association.

Sec. 2. Any person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall not be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings until he has been relieved of such disability.

Sec. 3. EMERITUS AND VISITING MEMBERS OF COMPONENT DISTRICT OR COUNTY MEDICAL SOCIETIES SHALL HAVE ALL THE RIGHTS AND PRIVILEGES OF MEMBERS EXCEPT THOSE OF VOTING AND HOLDING OFFICE. THEY SHALL BE EXEMPT FROM ALL DUES AND ASSESSMENTS, EXCEPT THAT THEY SHALL NOT BE ENTITLED TO COPIES OF MINNESOTA MEDICINE WITHOUT SUBSCRIPTION.

Sec. 4. Each member in attendance at the Annual Session shall have his name entered on the registration records indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge, which shall be evidence of his right to all the privileges of membership at that Session. No member shall take part in any of the proceedings of an Annual Session until he has complied with the provisions of the section.

CHAPTER II—TERMS OF OFFICE

TERMS OF OFFICE OF THE OFFICERS AND COMMITTEE MEN UNLESS OTHERWISE PROVIDED SHALL BE FOR A TERM OF ONE YEAR FROM JANUARY 1ST FOLLOWING DATE OF THEIR ELECTION.

CHAPTER III—ANNUAL AND SPECIAL SESSIONS OF THE ASSOCIATION

Section 1. The Association shall hold an Annual Session at such time and place as has been fixed at the preceding Annual Session by the House of Delegates, AND THE COMMITTEE ON SCIENTIFIC ASSEMBLY.

Sec. 2. Special meetings of either the Association or of the House of Delegates shall be called by the President on petition of twenty delegates OR fifty members.

CHAPTER IV—GENERAL MEETINGS

Section 1. All registered members may attend and participate in the proceedings and discussions of the General Meetings and of the Sections. The General Meetings shall be presided over by the President or by one of the Vice-Presidents, and before them shall be delivered the address of the President.

Sec. 2. The General Meeting may recommend to the House of Delegates the appointment of committees or commissions for investigation of special interest and importance to the profession and the public.

CHAPTER V—HOUSE OF DELEGATES

Section 1. The House of Delegates shall meet at 2 p. m. on the FIRST day of the Annual Session. It may adjourn from time to time as may be necessary to complete its business, provided, that its hours shall conflict as little as possible with the General Meetings. The order of business shall be arranged as a separate section of the program.

Sec. 2. Each component society shall be entitled to send to the House of Delegates each year one delegate for every fifty members, and one for each fraction thereof, but each component society which has made its annual report and paid its assessments as provided in this Constitution and By-Laws, shall be entitled to one delegate.

Sec. 3. Twenty delegates shall constitute a quorum.

Sec. 4. It shall, through its officers, Council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each Annual Session a stepping-stone to future ones of higher interest.

Sec. 5. THE CHAIRMEN OF THE VARIOUS APPOINTED COMMITTEES AND THE DELE-

GATES TO THE AMERICAN MEDICAL ASSOCIATION MAY ATTEND THE REGULAR MEETINGS OF THE HOUSE OF DELEGATES BUT WITHOUT THE RIGHT TO VOTE. THE CHAIRMEN OF THE VARIOUS COMMITTEES MAY PARTICIPATE IN DEBATE ON THEIR OWN REPORTS.

Sec. 6. It shall consider and advise as to the material interest of the profession, and of the public in those important matters wherein it is dependent upon the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

Sec. 7. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse among physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

Sec. 8. It shall encourage post-graduate and research work, as well as home study, and shall endeavor to have the results utilized and intelligently discussed in the county AND DISTRICT societies.

Sec. 9. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, AND AS IS HEREINAFTER PROVIDED.

Sec. 10. It shall, upon application, provide and issue charters to county OR DISTRICT societies organized to conform to this Constitution and By-Laws.

Sec. 11. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies to be designated by hyphenating the names of two or more counties so as to distinguish them from district and other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 12. It shall divide the State into Councilor Districts, specifying what counties each district shall include, and, when the best interest of the Association and profession will be promoted thereby, organize in each a district medical society, and all members of component county societies, and no others, shall be members in such district societies.

Sec. 13. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates, and may be present and participate in the debate on their reports.

Sec. 14. It shall approve all memorials and resolutions issued in the name of the Association before the same shall become effective.

Sec. 15. A MEMBER OF THE STATE ASSOCIATION MUST BE A MEMBER OF SOME COMPONENT COUNTY OR DISTRICT SOCIETY AND CONVERSELY A MEMBER OF A COUNTY OR DISTRICT SOCIETY MUST BE A MEMBER OF THE STATE ASSOCIATION. AN ACTION OF THE HOUSE OF DELEGATES OR OF THE COUNCIL SHALL BE BINDING UPON ITS MEMBERS UNLESS OTHERWISE PROVIDED.

CHAPTER VI—ELECTION OF OFFICERS

Section 1. THE MANNER OF ELECTIONS SHALL BE DETERMINED BY THE ASSEMBLED HOUSE OF DELEGATES, and a majority of the votes cast shall be necessary to elect.

Sec. 2. The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes AT THE SECOND MEETING OF THE HOUSE OF DELEGATES.

Sec. 3. Any person known to have solicited votes for or sought any office within the gift of this Assotiation shall be ineligible for any office for two years.

CHAPTER VII—DUTIES OF OFFICERS

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates. HE shall appoint all committees not otherwise provided for. HE shall deliver an annual address and perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit by appointment the various sections of the State and assist the Councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. THE VICE PRESIDENTS SHALL ASSIST THE PRESIDENT IN THE DISCHARGE OF HIS DUTIES. IN THE EVENT OF THE PRESIDENT'S DEATH, RESIGNATION OR REMOVAL FROM THE STATE OR INABILITY TO FUNCTION, THE FIRST VICE PRESIDENT SHALL AUTOMATICALLY FUNCTION AS PRESIDENT.

Sec. 3. The Treasurer shall give bond in such sum as the Council may require. The Council shall execute said bond with some indemnity company at the expense of the Association. He shall demand and receive all funds due the Association together with the bequests and donations. He shall pay money out of the treasury only on a written order of the CHAIRMAN OF THE COUNCIL, countersigned by the Secretary OF THE ASSOCIATION; HE SHALL subject his accounts to such examinations as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands. The amount of his salary shall be fixed by the Council. THE COUNCIL MAY AT ITS DISCRETION ALLOW THE SECRETARY A REVOLVING FUND OF SUCH MONEYS AS IT DEEMS ADVISABLE. THIS MONEY MAY BE EXPENDED BY THE SECRETARY FOR SUCH ADMINISTRATIVE PURPOSES AS HE DEEMS NECESSARY.

Sec. 4. The Secretary shall attend the General Meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be

ex-officio Secretary of the Council. He shall be custodian of all record books and papers belonging to the Association, except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer, all funds of the Association which come into his hands. He shall provide for the registration of the members and delegates at the Annual Sessions. He shall, with the coöperation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county OR DISTRICT society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county OR DISTRICT societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall employ such assistants as may be ordered by the COUNCIL, and shall make an annual report to the House of Delegates. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessment, collect the same, and at once turn it over to the Treasurer. Acting with the Committee on Scientific ASSEMBLY, he shall prepare and issue all Programs. The amount of his salary shall be fixed by Council. The Secretary shall present to the Association on the last day of the General Session, a summary of the proceedings of the Council and the House of Delegates.

CHAPTER VIII—COUNCIL

Section 1. THE COUNCIL SHALL HAVE FULL AUTHORITY AND POWER OF THE HOUSE OF DELEGATES BETWEEN ANNUAL SESSIONS, UNLESS THE HOUSE OF DELEGATES SHALL BE CALLED INTO SESSION AS PROVIDED IN THE CONSTITUTION AND BY-LAWS. IT SHALL CONSIST OF THE COUNCILORS AND THE PRESIDENT, AND THE PRESIDENT-ELECT AND EX-OFFICIO THE SECRETARY AND THE TREASURER OF THIS ASSOCIATION. A MAJORITY OF ITS MEMBERS SHALL CONSTITUTE A QUORUM.

Sec. 2. The Council shall meet on the FIRST day of the Annual Session and daily during the Session and at such other times as necessity may require, subject to the call of the chairman, or on petition of three Councilors. It shall meet on the last day of the Annual Session of the Association to organize and outline work for the ensuing year. It shall elect a chairman and a clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

Sec. 3. Each Councilor shall be organizer, peacemaker and censor for his district. He shall visit the counties in his district when necessary for the purpose of organizing component societies where none exist; for inquiring into the conditions of the profession, and for improving and increasing the zeal of the county societies and their members. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the FINANCE COMMITTEE OF THE COUNCIL on a proper itemized statement, and each Councilor MAY receive as compensation a per diem of $10.00 while engaged in making his official visits to the counties in his district, OR IN ATTENDANCE AT DULY AUTHORIZED SPECIAL MEETINGS OF THE COUNCIL, but this shall not be construed to include his expense in attending the Annual Session of the Association.

Sec. 4. The Council shall be the board of censors of the Association. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or this Association. All questions of an ethical nature brought before the House of Delegates or the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters be final.

Sec. 5. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

Sec. 6. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association, and shall have authority to appoint an editor and such assistants as it deems necessary, FOR PUBLICATIONS OTHER THAN MINNESOTA MEDICINE. IT SHALL DETERMINE THE SALARIES OF ALL EMPLOYES OF THIS ASSOCIATION. All money received by the Council and its agents, resulting from the discharge of the duties assigned to them, must be paid to the Treasurer of the Association. As the Finance Committee it shall annually SUPERVISE THE AUDITING OF the accounts of the Treasurer and Secretary and other agents of this Association and present a statement of the same in its annual report to the House of Delegates, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary. In the event of a vacancy in the office of the Secretary or the Treasurer, the Council shall fill the vacancy until the next annual election.

Sec. 7. IT MAY—AT ITS DISCRETION—EMPLOY EXPERT ASSISTANCE IN AUDITING THE VARIOUS RECORDS OF THE OFFICERS AND COMMITTEES OF THE ASSOCIATION.

Sec. 8. IT MAY—AT ITS DISCRETION—EMPLOY SUCH HELP AS IT MAY DEEM NECESSARY TO FACILITATE THE WORK OF THE ASSOCIATION.

Sec. 9. THE COUNCIL MAY AT ITS DISCRETION SPEND FOR THE PURPOSES FOR WHICH IT WAS CREATED, SUCH MONEYS AS ARE IN THE EDUCATIONAL FUND.

Sec. 10. THE COUNCIL SHALL FILL ANY VACANCY NOT OTHERWISE PROVIDED FOR WHICH MAY OCCUR DURING THE INTERVAL BETWEEN ANNUAL MEETINGS OF THE HOUSE OF DELEGATES; THE APPOINTEE SHALL SERVE UNTIL HIS SUCCESSOR HAS BEEN ELECTED AND HAS QUALIFIED.

Sec. 11. THE COUNCIL SHALL NOMINATE AND PRESENT TO THE HOUSE OF DELEGATES A LIST OF NOMINATIONS FOR DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION TO BE VOTED UPON BY THE HOUSE OF DELEGATES. ADDITIONAL NOMINATIONS MAY BE MADE FROM THE FLOOR OF THE HOUSE OF DELEGATES.

CHAPTER IX—COMMITTEES

Section 1. The standing committees shall be as follows and appointed by the President unless otherwise provided.

A Committee on Scientific ASSEMBLY.

A Committee on Public Policy and Legislation.

A Committee on Necrology.

AN EDITING AND PUBLISHING COMMITTEE.

A COMMITTEE ON PUBLIC HEALTH EDUCATION.

A COMMITTEE ON RADIO BROADCASTING.

A Committee on Hospitals and Medical Education.

A Committee on Arrangements, and such other committees as may be necessary.

COMMITTEE ON SCIENTIFIC ASSEMBLY:—

IN ORDER TO FACILITATE THE WORK OF THE ASSOCIATION, ITS SCIENTIFIC WORK SHALL BE GROUPED UNDER TWO SECTIONS, TO BE DESIGNATED, 1ST SECTION OR MEDICINE, AND 2ND SECTION, SURGERY, UNDER WHICH SHALL BE GROUPED THE APPROPRIATE SUBDIVISIONS REPRESENTED BY THE SPECIAL BRANCHES OF MEDICINE AND SURGERY RESPECTIVELY. THE PRESIDENT SHALL APPOINT FOR EACH ANNUAL MEETING A CHAIRMAN AND SECRETARY FOR EACH SECTION. THE MEMBERSHIP OF THE COMMITTEE ON SCIENTIFIC ASSEMBLY SHALL CONSIST OF THE CHAIRMAN AND SECRETARY OF THE SECTIONS OF MEDICINE AND SURGERY, THE PRESIDENT, FIRST VICE-PRESIDENT, THE PRESIDENT-ELECT AND THE SECRETARY OF THE ASSOCIATION. THE PRESIDENT AND FIRST VICE-PRESIDENT SHALL ACT AS CHAIRMAN AND VICE-CHAIRMAN RESPECTIVELY. IT SHALL BE THE DUTY OF THE COMMITTEE TO ARRANGE FOR AN ATTRACTIVE AND INSTRUCTIVE SCIENTIFIC PROGRAM AT THE VARIOUS SESSIONS OF THE ENSUING MEETING OF THE ASSOCIATION. IT SHALL BE THE DUTY OF THE SECTION CHAIRMAN TO PRESIDE OVER THE MEETINGS OF THE RESPECTIVE SECTIONS WHEN MEETING SEPARATELY AND ALTERNATELY WHEN THE PROGRAMS OF THE SECTIONS ARE COMBINED. THEY SHALL, FURTHERMORE, COOPERATE WITH THE RESPECTIVE SECTION SECRETARIES IN THE ARRANGEMENT OF THIS PROGRAM. THIS COMMITTEE SHALL COLLABORATE WITH THE COMMITTEE ON ARRANGEMENTS TO THE BEST INTERESTS OF THE ANNUAL MEETING.

Sec. 3. The Committee on Public Policy and Legislation shall consist of *5* members and the President and Secretary. Under the direction of the House of Delegates, it shall represent the Association in securing and enforcing legislation in the interest of public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state and national affairs and elections.

Sec. 4. THE EDITING AND PUBLISHING COMMITTEE SHALL CONSIST OF 5 MEMBERS—APPOINTED SERIALLY BY THE PRESIDENT, 2 SHALL BE MEMBERS OF THE HENNEPIN COUNTY MEDICAL SOCIETY, 2 SHALL BE MEMBERS OF THE RAMSEY COUNTY MEDICAL SOCIETY, AND ONE SHALL BE A MEMBER OF SOME OTHER COUNTY MEDICAL SOCIETY,—EACH SHALL HOLD OFFICE FOR A PERIOD OF 5 YEARS. THE EDITING AND PUBLISHING COMMITTEE SHALL HAVE FULL RESPONSIBILITY AND CONTROL OF THE EDITING AND PUBLISHING OF MINNESOTA MEDICINE AND THE APPOINTMENT OF ITS EDITOR AND BUSINESS MANAGER AND SHALL DETERMINE THEIR COMPENSATION SUBJECT TO APPROVAL BY THE COUNCIL. THEY SHALL MAKE AN ANNUAL REPORT TO THE HOUSE OF DELEGATES.

THE STATE ASSOCIATION SHALL PAY THE EDITING AND PUBLISHING COMMITTEE THE SUM OF TWO DOLLARS PER YEAR PER MEMBER IN CONSIDERATION FOR WHICH EACH MEMBER OF THE ASSOCIATION SHALL RECEIVE A COPY OF THE JOURNAL FOR ONE YEAR.

AN ASSOCIATE EDITOR SHALL BE APPOINTED FOR EACH COUNCILOR DISTRICT, BY THE EDITING AND PUBLISHING COMMITTEE.

THE PROFITS DERIVED FROM THE PUBLICATION OF THE JOURNAL SHALL BE PAID INTO THE TREASURY OF THE STATE MEDICAL ASSOCIATION AND ANY DEFICIT ARISING FROM THE PUBLICATION OF THIS JOURNAL BE PAID FROM THE TREASURY OF THE ASSOCIATION.

Sec. 5. THE COMMITTEE ON PUBLIC HEALTH EDUCATION SHALL CONSIST OF 5 MEMBERS OR AS MANY MORE AS THE COUNCIL MAY DETERMINE. ITS FUNCTION SHALL

BE, FIRST, TO STRIVE TO DEVELOP AN INTELLIGENT PUBLIC VIEWPOINT TOWARD THE MEDICAL PROFESSION; SECOND, TO COOPERATE WITH THE VARIOUS AGENCIES THROUGHOUT THE STATE WHOSE FUNCTION IS THE PROMOTION OF PUBLIC HEALTH, AND WHOSE GOVERNING BODIES ARE COMPOSED IN WHOLE OR IN PART OF LAYMEN, SO THAT FROM A MEDICAL STANDPOINT THESE AGENCIES SHALL BE INTELLIGENTLY ADMINISTERED; THIRD, TO USE SUCH MEASURES THROUGHOUT THE STATE AS MAY BE NECESSARY TO ELIMINATE FRAUDULENT MEDICAL ADVERTISEMENTS FROM THE PUBLIC PRESS; FOURTH, TO AID AND ENCOURAGE EACH COMPONENT SOCIETY TO CONDUCT AT LEAST ONE ANNUAL PUBLIC MEDICAL MEETING; FIFTH, TO ENCOURAGE PUBLIC HEALTH EDUCATIONAL MATTERS THROUGH THE CHANNELS OF THE PUBLIC PRESS—RADIO—MOVIES AND THE LECTURE PLATFORM.

Sec. 6. THE RADIO BROADCASTING COMMITTEE SHALL CONSIST OF 5 MEMBERS. ITS FUNCTION SHALL BE TO SECURE PAPERS SUITABLE FOR RADIO BROADCASTING AND TO SECURE AS WIDE NEWSPAPER PUBLICITY FOR THESE PAPERS THROUGHOUT THE STATES AS MAY BE PRACTICABLE. THE NAMES OF THE WRITERS OF SUCH PAPERS SHALL NOT BE ANNOUNCED OVER THE RADIO OR IN THE PAPERS OR MAGAZINES IN WHICH THEY ARE PUBLISHED. THEY SHALL BE ANNOUNCED AND PUBLISHED AS BEING UNDER THE AUSPICES OF THE MINNESOTA STATE MEDICAL ASSOCIATION AND THE COUNTY SOCIETY OF WHICH THE WRITER IS A MEMBER TOGETHER WITH THE NAME OF THE CITY IN WHICH THE WRITER RESIDES.

Sec. 7. THE COMMITTEE ON HOSPITALS AND MEDICAL EDUCATION SHALL CONSIST OF FIVE MEMBERS. ITS FUNCTION SHALL BE:—

1. TO GIVE INFORMATION AND RECOMMENDATIONS, IF INDICATED, TO THE ASSOCIATION IN MATTERS PERTAINING TO MEDICAL EDUCATION IN THE STATE.

2. TO ENCOURAGE AND DEVELOP A COMPREHENSIVE PROGRAM FOR POST-GRADUATE INSTRUCTION, AND IN COOPERATION WITH THE FACULTY OF THE UNIVERSITY TO ARRANGE FOR SUCH COURSES TO BE GIVEN AT A MINIMUM OF EXPENSE AND LOSS OF TIME.

3. TO MAINTAIN JURISDICTION OVER THE STANDARDIZATION OF HOSPITALS WITHIN THE STATE AND IN COOPERATION WITH NATIONAL SOCIETIES WHO MAINTAIN BUREAUS OF STANDARDIZATION TO SEE THAT SUCH STANDARDS ARE MAINTAINED.

4. THE CHAIRMAN OF THIS COMMITTEE SHALL BE A REPRESENTATIVE OF THIS ASSOCIATION AT THE ANNUAL CONGRESS OF MEDICAL EDUCATION AND MEDICAL LICENSURE, PUBLIC HEALTH AND HOSPITALS OF THE NATIONAL COMMITTEE.

Sec. 8. The Committee on Arrangements shall be appointed by the component society of the county in which the Annual Session is to be held. It shall provide suitable accommodations for the meeting places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary for publication in the program, and shall make additional announcements during the session as occasion may require. THE COMMITTEE ON ARRANGEMENTS SHALL COOPERATE WITH THE COMMITTEE ON SCIENTIFIC ASSEMBLY IN THE WORK OF SECURING AN ATTRACTIVE AND SUCCESSFUL PROGRAM FOR THE ANNUAL GENERAL SESSIONS OF THE ASSOCIATION.

CHAPTER X—COUNTY AND DISTRICT SOCIETIES

Section 1. All county AND DISTRICT societies now in affiliation with the Association or those which may hereafter be organized in this State, which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, on application, receive a charter from and become a component part of this Association.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the Council or the House of Delegates and shall be signed by the President and Secretary of this Association. The Council or the House of Delegates shall have the authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made, with the aid of the Councilor for the District, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county and district society shall judge of the qualifications of its own members, but, as such societies are the only portals of this Association and to the American Medical Association, every reputable and legally registered physician who does not practice or claim to practice, nor lend his support to any exclusive system of medicine, shall be entitled to membership; provided, however, that certain physicians who occupy teaching or research positions in recognized medical schools and who do not wish to be licensed to practice medicine, may acquire honorary membership in the State and component societies. Before a charter is issued to any county or district society, full and ample notice and opportunity shall be given to

every such physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county or district in refusing him membership, or in suspending or expelling him, shall have the right to appeal to the Council, and its decision shall be final.

Sec. 7. In hearing appeals the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both as a Board and as individual Councilors, in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 8. A physician living on or near a county line may hold his membership in that county society most convenient for him to attend, on permission of the society under whose jurisdiction he resides.

Sec. 9. Each component society shall have general direction of the affairs of the profession in its county or district, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county or district; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county or district.

Sec. 10. At some meeting in advance of the Annual Session of this Association, each county or district society shall elect a delegate or delegates and an alternate or alternates to represent it in the House of Delegates of this Association, in the proportion of one delegate to each fifty members or fraction thereof, and the Secretary of the society shall send a list of such delegates to the Secretary of the Association 2 MONTHS BEFORE THE DATE FIXED FOR THE ANNUAL MEETING.

Sec. 11. The Secretary of each component society shall keep a roster of its members and of the non-affiliated registered physicians of the county or district, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In keeping such roster the Secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county or district, and in making his annual report he shall be certain to account for every physician who has lived in the county or district during the year.

Sec. 12. The Secretary of each component society shall forward the assessment of its members together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county or district to the Secretary of this Association each year before December 31st.

Sec. 13. Each county or district society which fails to pay its assessment or make the report required, on or before December 31st, shall be held as suspended and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association or of the House of Delegates until such requirements have been met.

Sec. 14. The ANNUAL per capita dues TO THE ASSOCIATION OF the members of the component societies shall be DETERMINED BY THE HOUSE OF DELEGATES AND shall be paid and forwarded as hereinbefore provided, BEING PAYABLE ON OR BEFORE JANUARY 1ST OF THE YEAR FOR WHICH THEY ARE LEVIED.

CHAPTER XI—MISCELLANEOUS

Section 1. THE TIME REQUIRED FOR DELIVERY OF ANY PAPER OR ADDRESS BEFORE THE ASSOCIATION SHALL BE LEFT TO THE DISCRETION OF THE PROGRAM COMMITTEE.

Sec. 2. All papers read before the Association or any of the Societies shall become its property. Each paper shall be deposited with the Secretary when read.

Sec. 3. The deliberations of this Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this Constitution and By-Laws.

Sec. 4. The Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XII—AMENDMENTS

These By-Laws may be amended at any annual Session by a majority vote of all the delegates present at that session, after the amendment has lain on the table for one day. UPON THE ADOPTION OF THIS CONSTITUTION AND THESE BY-LAWS ALL PREVIOUS CONSTITUTIONS AND BY-LAWS ARE THEREBY REPEALED.

MINNESOTA LICENTIATES, JANUARY, 1927

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

LICENTIATES OF JANUARY, 1927

BY EXAMINATION

NAME	MEDICAL COLLEGE	ADDRESS
Bailey, Richard Jesse	U. of Minn., M.B. 1926	Miller Hospital, St. Paul.
Barry, Gerald Williams	St. Louis U., Mo., M.D. 1926	St. Joseph's Hospital, Kansas City, Mo.
Brown, Henry Russell	U. of Minn., M.B. 1926	Miller Hospital, St. Paul.
Boies, Lawrence Randall	Columbia, M.D. 1926	New Asbury Hospital, Minneapolis.
Campbell, Orwood Jackson	Rush, M.D. 1923	University Hospital, Minneapolis.
Ehrlich, Sol Paul	U. of M., M.B. 1926	General Hospital, Minneapolis.
Exner, Frederick Blythe	U. of M., M.B. 1926	General Hospital, Minneapolis.
Fox, Ben	Wash. Univ., Mo., M.D. 1925	Mayo Clinic, Rochester.
Gardner, Walter Peter	U. of Minn., M.B. 1926	481 Iglehart, St. Paul.
Gibbons, Francis C.	U. of Minn., M.B. 1926	General Hospital, Minneapolis.
Grimes, Marian	U. of Minn., M.B. 1926	General Hospital, Minneapolis.
Guilbert, Gerald Didra	U. of Minn., M.B. 1926	St. Mary's Hospital, Duluth.
Hazeltine, Matthew Emery	Stanford, M.D. 1926	Mayo Clinic, Rochester.
Johnson, Eugene Ferdinand	U. of Minn., M.B. 1926	General Hospital, Minneapolis.
Kasper, Eugene Mitchell	U. of Minn., M.B. 1926	General Hospital, Minneapolis.
Kellum, Eugene LeRoy	U. of Pa., M.D. 1924	904 W. Center, Rochester.
Koop, Herman Early	U. of Minn., M.B. 1926	506½ E. 4th St., Duluth.
Koop, Severin Herman	U. of Minn., M.B. 1926	St. Mary's Hospital, Duluth.
Kumpf, Albert Ernest	U. of Minn., M.B. 1926	University Hospital, Minneapolis.
Larson, Lawrence Myrlin	U. of Minn., M.B. 1926	2610 Polk St. NE., Minneapolis.
Leonard, Gilbert John	U. of Minn., M.D. 1926	351 Ramsey, St. Paul.
Maeder, Edward Charles	U. of Minn., M.B. 1926	512 Delaware St. SE., Minneapolis.
Malerich, J. Anthony	U. of Minn., M.B. 1926	St. Mary's Hospital, Duluth.
Moriarty, Margaret Berenice	U. of Minn., M.B. 1926	University Hospital, Minneapolis.
Northey, Thornton McKee	U. of Minn., M.B. 1926	Northwestern Hospital, Minneapolis.
Page, Raymond Lester	U. of Minn., M.B. 1926	Swedish Hospital, Minneapolis.
Peterson, Carl Melancton	U. of Minn., M.B. 1926	St. Mary's Hospital, Duluth.
Richman, Samuel S.	U. of Minn., M.B. 1926	General Hospital, Minneapolis.
Ripple, Rudolph Joseph	U. of Minn., M.B. 1926	Miller Hospital, St. Paul.
Rohrer, Christian Albert	U. of Minn., M.B. 1926	4001 39th Ave. So., Minneapolis.
Rollie, Carl Olaf	U. of Minn., M.B. 1926	McClusky, N. D.
St. Cyr, Kenneth J.	U. of Minn., M.B. 1926	Robbinsdale, Minn.
Saint, James Harold	Durham, M.B. 1924	Mayo Clinic, Rochester.
Samson, Emmett Robert	U. of Minn., M.B. 1926	1919 2nd Ave. So., Minneapolis.
Scherer, Roland Gustav	U. of Minn., M.B. 1926	Swedish Hospital, Minneapolis.
Sherrill, Walter Paul	Cornell, M.D. 1925	Mayo Clinic, Rochester.
Smith, Leonard Marshall	Northwestern, M.D. 1926	Mayo Clinic, Rochester.
Smith, Wm. Marshall	Northwestern, M.D. 1926	Mayo Clinic, Rochester.
Stelter, Lloyd Albert	U. of Minn., M.B. 1926	3909 Aldrich Ave. So., Minneapolis.
Stryker, Wm. Byrd	U. of Minn., M.B. 1926	University of Minnesota Medical School.
Thabes, John Alois	U. of Minn., M.B. 1926	Brainerd, Minn.
Thompson, Gershom Jos.	Wash. Univ., Mo., M.D. 1925	Mayo Clinic, Rochester.
Tinkess, Donald Ewing	McGill, M.D. 1925	Mayo Clinic, Rochester.
Watson, Sidney James	U. of Minn., M.B. 1926	General Hospital, Minneapolis.
Winther, Nora M. C.	U. of Minn., M.B. 1926	University Hospital, Minneapolis.

BY RECIPROCITY

Binger, Melvin Wm.	U. of Neb., M.D. 1926	Mayo Clinic, Rochester.
Brunsting, Louis Albert	U. of Mich., M.D. 1924	Mayo Clinic, Rochester.
Brown, Clarence Baxter	Rush, M.D. 1925	Mayo Clinic, Rochester.
Eubanks, Geo. Foster, Jr.	Emory, M.D. 1925	Mayo Clinic, Rochester.
Fleishman, Max	U. of Neb., M.D. 1924	Worthington, Minn.
Good, Louis Porter	Johns Hopkins, M.D. 1924	Mayo Clinic, Rochester.
Good, Ralph Wm.	U. of Cin. Coll. Med., M.D. 1924	Mayo Clinic, Rochester.
Humiston, Homer Wheeler	Harvard, M.D. 1925	849 1st SW., Rochester.
Kolars, James Joseph	Creighton, M.D. 1926	St. Mary's Hospital, Minneapolis.
Light, Samuel Emlin	U. of Neb., M.D. 1925	N. P. B. A. Hospital, St. Paul.
Martinson, Carl Jerome	Col. Med. Evang. Cal., M.D. 1925	Wayzata, Minn.
Mayne, Roy Malone	U. of Ia., M.D. 1921	Fidelity Building, Duluth.
Metheny, David	Jefferson, M.D. 1923	Rochester, Minn.
Miksch, Henry Fred	U. of Pa., M.D. 1923	1829 5th Ave. So., Minneapolis.
Miller, Chas. Duane	Ohio State U., M.D. 1921	Mayo Clinic, Rochester.
Norton, Donald Martin	Marquette, M.D. 1926	Mayo Clinic, Rochester.
Norton, Manville Wm.	U. of Mich., M.D. 1924	Mayo Clinic, Rochester.
Perry, Clarence Larimore	Ohio State U., M.D. 1924	Mayo Clinic, Rochester.
Rosenberg, Geo. Clifford	Loyola, M.D. 1926	2728 Humboldt Ave. So., Minneapolis.
Slattery, Peter A.	Creighton, M.D. 1908	Mound, Minn.
Thomas, Lester Chalmers	Northwestern, M.D. 1926	810 1st St. SW., Rochester.
Wright, Wm. Cale	U. of Mich., M.D. 1924	Mayo Clinic, Rochester.

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PROGNOSIS IN HEART DISEASE WITH SPECIAL REFERENCE TO CORONARY DISEASE*

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Prognosis is one of the most fascinating phases of medicine. It may be defined as the balancing of probabilities in which all essentials bearing on the subject must be carefully analyzed and their relative importance weighed before a verdict is pronounced. It requires broad experience, knowledge of medicine in general, sense of proportion and the instinct to measure the abstruse. The patient's age, sex, occupation, familial tendencies, the objective signs of disease, those treacherous but significant subjective complaints indicative of derangement of function and the etiology of the lesion must all receive due thought and deliberation.

The estimation of the expectation of life in a given case of heart disease is often difficult and even after due consideration of all the available facts and an attempt to correlate the symptoms and the findings in their proper order, an accurate conclusion is not easily attained. The patient usually seeks medical counsel with such implicit confidence that the opinion given him may entirely alter his future life. It is regrettable that too often an irrelevant symptom or sign is misinterpreted during the medical appraisal and results in the patient's unnecessary invalidism and great mental unrest. Many cases of cardiac neurosis are directly attributable to diagnostic error and to unwarranted medical pessimism. Likewise, some subtle but ominous symptom or sign of serious disease may be lightly dismissed and be directly responsible for an unnecessary or a premature catastrophe.

Intelligent prognosis is, of course, impossible without accurate diagnosis. A single examination, regardless of its thoroughness and completeness, is often an insufficient basis for either an accurate diagnosis or an intelligent prognosis. The patient's age at the onset of the disease has an important bearing on prognosis. Cardiac infections are notoriously prevalent in young persons, being largely limited to the first three decades of life when rheumatic fever, chorea, tonsillitis, and the acute exanthemas are common etiologic agents. Most patients in the middle and later decades suffer from degenerative heart disease, such as results from arteriosclerosis, hypertension, exophthalmic goiter and adenomatous goiter with hyperthyroidism. Syphilitic cardiovascular disease is most common in the fourth and fifth decades, owing to the fact that about nineteen years elapse from the time of infection until the appearance of symptoms and signs of circulatory damage.

The length of time elapsing between the initial cardiac insult and the careful appraisal of the cardiovascular system and institution of a correct remedial regimen is a vital factor in determining the patient's life expectancy. Ordinarily life expectancy of women with cardiac disease is probably greater than that of men, because women, as a group, are subject to lesser occupational stresses and more readily and completely adapt themselves to their physical handicap. Cardiac infections are more prevalent among females, while degenerative cardiovascular disease is more prevalent among males.

Occupation is an important factor in influencing prognosis, and patients who have cardiac disease, and whose daily routine subjects them to strenuous physical strain and stress, do not, as a rule, have a life expectancy comparable to that of others performing light and less arduous duties. It is always important for those afflicted with heart disease to obtain sedentary employment in which the ordinary hazards of cardiac disease are minimal, and the responsibility for advising this belongs to the physician. It is becoming more and more difficult for patients to carry out this plan as competition in the sedentary fields is extremely keen, and many of the larger institutions give preference to healthy persons through the selective medium of physical examination.

*Read before the Insurance Examiners of the State of Iowa, December 8, 1926, Des Moines, Iowa.

One is repeatedly impressed and even surprised by the familial tendency of heart disease, particularly of the degenerative types. There is probably no scientific reason for assuming that the disease is hereditary but it is probable that poor eugenics may result in the propagation of cardiovascular systems that are fundamentally lacking in quality and thereby less tolerant to the ravages of life. Temperament is undoubtedly an important factor in influencing cardiac disease, particularly as it affects the patient's manner of living, and is unquestionably a heritage.

The status of the heart, as determined by careful physical examination, affords significant information regarding prognosis. The degree of efficiency and the integrity of the diseased heart are directly dependent on the condition of the myocardium. The size of the heart is an important prognostic sign, for marked enlargement, particularly if dilatation exceeds hypertrophy, frequently ushers in severe heart failure. The significance of recurrent attacks of heart failure, especially if they are unprovoked, is extremely grave, and opinion is unreliable if the patient is seen for the first time during an attack. It is important to realize that the agents responsible for the heart failure are those that cause death, namely, infection, degenerative processes, alterations in cardiac rhythm, and toxemia.

Murmurs are significant signs in the diagnosis of various types of lesions, but do not merit the emphasis that has been accorded them in the past. It is not so long since the presence of a murmur was considered sufficient reason, regardless of its character, time, or location, for a diagnosis of organic disease of the heart. Murmurs are frequently evanescent, particularly those accompanying marked degrees of anemia and the increase in the rate of circulation seen in hyperthyroidism, pyrexia, and so forth. The murmurs that are now recognized as being of greatest diagnostic significance are the diastolic murmurs of mitral stenosis and aortic insufficiency. The murmurs themselves do not, of course, augment the lesion, but, when considered in conjunction with other symptoms and signs, they do throw light on the condition of the myocardium and the valves.

Gallop rhythm, and heart tones that are distant and lack definition and differentiation are important signs, for they indicate a marked degree of myocardial fatigue.

Pulsus alternans is always a grave prognostic sign and is usually soon followed by death; 74 per cent of White's series of patients died within a period of three years.

Cardiac arrhythmia in itself does not necessarily increase the seriousness of the prognosis, but it often occurs when the heart disease is well advanced, particularly in cases of auricular fibrillation, one of the most common and important disorders of cardiac rhythm. In a group of 500 patients with auricular fibrillation at the Mayo Clinic,[12] 41 per cent died from heart disease about fifteen months after examination. White, in a study of 100 cases of auricular fibrillation found the cardiac mortality to be 48 per cent. MacIlwaine and Campbell reported a mortality of 68 per cent twelve months after the patient had been observed in the Royal Victoria Hospital in Belfast. Pardee attributes the high mortality not to the arrhythmia but largely to the omission of treatment immediately after recovery from an attack of acute heart failure.

Premature contractions, or extrasystoles themselves, do not affect prognosis except as they occur in conjunction with serious disease of the heart. They are common in perfectly normal hearts.

The prognosis in cases of complete heart-block, particularly if associated with Adams-Stokes' attacks, is as a rule unfavorable. White and Viko noted a 50 per cent cardiac mortality in a group of twenty-four cases observed over a period of from one to seven years. Seven patients died within a year after the discovery of the complete block. In a series of thirty-seven cases at the Mayo Clinic,[13] the cardiac mortality was 68 per cent, an average of seven months after examination. Of the patients with Adams-Stokes' attacks, 73 per cent have died from heart disease.

With greater experience in which the trend of various pathologic processes has been revealed the etiology of the cardiac lesion has probably become one of the most significant prognostic factors. We no longer classify our cases as mitral insufficiency or chronic myocarditis but classify them according to etiology before venturing a prognosis.

It is well known that a wide range exists in the mortality in the different types of cardiac disease. In general, the degenerative types of cardiac disease carry the highest mortality, owing to the fact that the patients are older, that the

cardiac lesion is so frequently but a part of a more or less generalized pathologic process, and that the underlying disease is progressive. This is particularly true of the hypertensive and arteriosclerotic types of heart disease.

Electrocardiography is a very important adjunct in the evaluation of life expectancy.[14] Abnormalities are not infrequently discovered that have not been revealed by other methods of physical examination. I wish particularly to stress the significance of disease of the coronary arteries, as it so frequently is a lion masquerading in the guise of a lamb. It is beyond doubt the most treacherous of all the cardiopathies.

Many physicians regard the terms coronary sclerosis and angina pectoris as synonymous, yet a recent careful clinical and pathologic study of a large series of cases of coronary sclerosis[15] revealed the fact that only 30 per cent of the cases were attended by anginal attacks. Before discussing the prognosis of angina pectoris it is necessary to define my interpretation of this term, as it is used to denote different conditions. Certain physicians use it to designate a definite disease with a train of clinical symptoms and characteristic pathologic lesions, while others use it to designate a syndrome that may occur in many diseases. The prognosis of angina pectoris will obviously differ greatly according to the conception adopted.

The world owes a debt of gratitude to Heberden for his accurate description of angina pectoris, which was published in 1768. I shall quote from his original article: "There is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind of danger belonging to it, and not extremely rare, which deserves to be mentioned more at length. The seat of it, and sense of strangling and anxiety with which it is attended, may make it not improperly be called angina pectoris.

"They who are afflicted with it, are seized while they are walking, (more especially if it be up hill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life, if it were to increase or to continue; but the moment they stand still, all this uneasiness vanishes.

"In all other respects the patients are, at the beginning of this disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and often more inclined to the left than to the right side."

As time elapsed other observers added to and subtracted from Heberden's classical description and the term false or pseudo angina was, unfortunately, introduced into medical literature. This term means absolutely nothing. Ultimately a subdivision was made and the terms hysterical angina, toxic angina and vasomotor angina led to such a jumble of types that the true issue was almost hopelessly submerged. During the last decade, however, some degree of order has succeeded the chaotic state, chiefly through the teachings of Mackenzie and Allbutt. While they were not in agreement as to the anatomic lesions responsible for angina pectoris, they both attempted to revive the original definition of Heberden and to restrict the use of the term to the disease which he so clearly described. The diagnosis of angina pectoris does not present greater problems than those encountered in any disease, in fact they are often much less perplexing, and it is absolutely essential to abolish irrevocably such terms as false or pseudo angina pectoris. There is no more justification for such a term than for pseudo carcinoma of the stomach.

Jenner was the first to associate angina pectoris with disease of the coronary arteries, while Huchard believed that disease of the coronaries or the aorta, particularly if the coronary orifices were encroached on, was the anatomic cause. More recently Allbutt brought forth his concept that angina pectoris is due to disease of the thoracic aorta, particularly of the root of the aorta and with involvement especially of its outer investment. He even stated that the coronary arteries and the myocardium had nothing to do with the pain of angina pectoris. Contrary to this view, Mackenzie held that in angina the symptoms were produced by exhaustion of the muscle of the heart and he emphasized the importance of coronary and myocardial disease.

In carefully analyzing these opinions and adding to them a personal experience based on clinical and pathologic correlations, it is impossible to relinquish the hypothesis of coronary disease in the production of angina pectoris. This view is particularly strengthened by a consideration of the characteristic syndrome that ensues following the sudden occlusion of a coronary vessel. Mackenzie's theory of the production of cardiac

pain has great breadth and perspective and is in fact the only theory submitted thus far that will explain cardiac pain under all known pathologic conditions.

The prognosis in cases of angina pectoris is grave and extremely uncertain. The outlook, essentially, depends on the integrity of the myocardium and the status of the general arterial system. The prognosis depends, to an appreciable degree, on the coöperation given by the patient, who must prepare himself to live on the level of his damaged heart.

Statistical studies of cardiac mortality are important but they are often inadequate and misleading when applied to the individual patient. Death from angina pectoris may occur in several ways. It may occur suddenly in the first attack, without antecedent symptoms. Such deaths are still quite universally attributed to "acute indigestion" and "ptomain poisoning," while in reality they are usually the result of acute coronary obstruction due to embolism or thrombosis. Death may result from progressive myocardial failure after several months or years of anginal attacks and not infrequently the terminal picture is that of congestive heart failure. The attacks of angina pectoris may cease, only to be supplanted by paroxysmal seizures of severe dyspnea, finally resulting in death from myocardial failure. Occasionally the anginal attacks cease spontaneously and death occurs from some disease unrelated to the cardiovascular system.

A general idea of the cardiac mortality in angina pectoris is shown by the fact that 47 per cent of a series of patients had died during a period of five years.[16] In another group[17] in which the data were based chiefly on necropsy records it was found that in known cases of angina pectoris, death had occurred suddenly in 83 per cent.

Besides the cases of coronary sclerosis exhibiting attacks of angina pectoris there are two other important types. In about 40 per cent of the cases the syndrome of progressive myocardial failure occurs, manifested in the milder forms by exertion dyspnea, and in the more severe forms by congestive heart failure. These cases have been, and still are, to a certain extent, diagnosed as chronic myocarditis, which is obviously incorrect since the pathologic process is not inflammatory in nature but the result of chronic and usually progressive impairment of circulation of the myocardium. As a group, these cases show less marked sclerosis of the coronary vessels with much less tendency to obliteration of the lumen than do those attended by anginal seizures. Two factors apparently definitely influence the myocardium in coronary sclerosis, first, the degree of arterial obliteration, and second, the length of time that the circulatory impairment has existed. Sudden death and death from gradual cardiac failure occur about equally in this group of cases.

The other form of coronary sclerosis is one that should receive our closest attention. It occurs in about 30 per cent of the cases and discloses little or no diagnostic evidence of its presence. For want of a better term we have come to refer to this form as occult coronary sclerosis.

These cases have been identified by the pathologist. Osler called attention to them in his statement that a certain proportion of patients have clear-cut heart sounds, a good pulse, and no obvious signs of cardiac disease, yet the coronary arteries may be extensively diseased. Patients with this form of the disease are largely in the later decades of life with outstanding complaints referable to other parts of the body, such as nephritis, diabetes mellitus, carcinoma, hepatic cirrhosis, and prostatic hypertrophy. It may be that the physician is overzealous regarding the patient's outstanding disease and is somewhat negligent in his appraisal of the body as a whole. Notwithstanding this fact, it behooves all of us to be ever alert in our search for coronary sclerosis in patients in middle and later life.

The electrocardiogram is most helpful in the diagnosis of coronary sclerosis. Significant abnormalities are disclosed in 70 per cent of the cases. I shall not attempt to discuss this phase of the subject here as it is beyond the scope of this paper. I believe that the time is rapidly approaching when all insurance companies will resort to electrocardiographic examinations as a routine procedure in the examination of certain types of applicants. I refer particularly to the middle-aged who seek insurance and those who apply for policies involving large sums of money. Not infrequently it is necessary for me to testify in cases in which the diagnosis of coronary sclerosis has been made and large policies have been granted but a relatively short time before death. Among these cases are many instances of delib-

erate misrepresentation while in others the applicant unquestionably has been unaware of his trouble. Electrocardiographic examination would have rejected irrevocably the majority of these applicants.

Sudden occlusion of a branch of the coronary artery due to embolism or thrombosis is not rare during the course of disease of the coronary arteries. Such an accident may be the first intimation of disease, although more often it occurs in known cases of angina pectoris. Its recognition is important, for the resulting symptoms may simulate acute surgical abdominal lesions.

As the result of sudden obstruction of a branch of the coronary system due to thrombosis or embolism, an anemic infarct occurs, which may be small or large depending on the size of the vessel occluded. If the area is small and is not in a vital portion of the heart, repair by fibrosis occurs and a small area of scar tissue results which may not permanently impair myocardial function. If, however, a large area of myocardial softening occurs, death soon ensues, or, if the heart has withstood the immediate insult, serious myocardial insufficiency may result, or true ventricular aneurysms may develop at the point of infarction and eventually lead to rupture of the heart.

A definite syndrome usually attends acute coronary closure. The onset of the attack is usually sudden and consists of excruciating retrosternal or upper abdominal pain, with or without the usual radiation so typical of angina pectoris. The pain is usually severe for from several hours to several days. The protracted duration of the attacks is one of the important points in distinguishing acute coronary occlusion from simulating conditions. The patient, as a rule, is in profound shock, with ashen facies denoting great suffering and anxiety, cold perspiration and clammy extremities. Respirations are shallow and rapid, the pulse thready and the blood pressure low. Fever, often attaining 100° to 102°, may be present within twenty-four hours.

Physical examination, soon after the onset of the accident, may reveal only weak, rapid heart tones. Often within eighteen or twenty-four hours a distinct pericardial rub is audible, usually to and fro in character, due to the inflammatory reaction of the visceral pericardium overlying the infarcted area. If the infarct is large, the area of cardiac dulness will increase, owing to the weakening of the myocardium. The upper abdomen may be distinctly resistant and almost rigid on palpation, falsely pointing to disease of the upper abdomen.

The leukocyte counts vary from 9,000 to 25,000 and in more than half the cases vary from 15,000 to 20,000. The differential leukocyte count usually shows the polymorphonuclear cells to comprise from 80 to 90 per cent of the cellular elements. Leukocytosis, within two hours after the onset of the attack, may be as high as 20,000. Libman has shown that, when the leukocytosis does not definitely recede within a few days, or if it increases with or without a preliminary decrease and there is no complication to explain it, progressive necrosis or intraventricular thrombosis, or both, are present.

About half the patients with coronary thrombosis and embolism die at the time of the attack or within a few days, while those who survive the immediate effects of the accident live from a few months to several years with varying degrees of cardiac handicap.

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RECENT OBSERVATIONS ON SCARLET FEVER

The new method of treating scarlet fever patients by the administration of a suitable antitoxin has presented a problem in relation to the development of protection against the disease. A study in the New Haven Hospital of late immunity developed by former patients who were treated with scarlet fever antitoxin and those who did not receive antitoxin indicates that there may be some disadvantage in the therapeutic dosage with the antitoxin in respect to the establishment of a more lasting immunity. It may turn out that the combating of the actual disease decreases the security that an attack of scarlet fever almost invariably promoted in former days. Nicholls at Yale has demonstrated the presence of *Streptococcus scarlatinae* in a proportion of persons who exhibited features of infection with hemolytic streptococci without evidences of clinical scarlet fever, thus showing that an existing immunity to the soluble toxin of *Streptococcus scarlatinae* does not prevent the development of local pyogenic infections with this organism. Persons so infected may serve as foci for the spread of scarlet fever. Trask of Yale urges that a large excess of antitoxin be used for therapeutic purposes to obtain consistently satisfactory results. In late cases with faded rash, little or no benefit may be expected from antitoxin therapy. Septic complications may continue when the specific toxemia and its attendant rash have terminated, thus suggesting that *Streptococcus scarlatinae* may have two different modes of attack and thus result in different clinical pictures of the disease. (Jour. A. M. A., March 26, 1927, p. 1004.)

ASTHMOLYSIN

According to the advertising, Asthmolysin is "a combination of the suprarenal and pituitary hormones in distinct proportions" which is prepared by a "special method." The use of pituitary in bronchial asthma is contraindicated. While epinephrine is used with advantage in some forms of asthma, there does not appear to be any reason why physicians should use a secret preparation containing an undetermined amount of it, when accuracy of dosage and therapeutic effectiveness may be obtained by the use of the pharmacopeial product. (Jour. A. M. A. March 12, 1927, p. 858.)

RETROPERITONEAL LIPOMA: A REPORT OF THREE CASES*

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and
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Benign retroperitoneal tumor is often diagnosed ascites, ovarian cyst, and occasionally inoperable malignant growth. One or two cases have been diagnosed tuberculous peritonitis.

About 200 cases of retroperitoneal tumor have been reported in the literature. Von Wahlendorf reviewed 165 of these up to 1921, and Lecène reported 119. These cases no doubt overlap. Von Wahlendorf's series apparently included the cases reported by Lecène. Masson and Horgan reported twelve cases from the Mayo Clinic in 1921. Hirsch and Wells reported one case; this tumor was perhaps the largest one recorded, weighing 69 pounds. It was not removed ante mortem. Johnson, Holmes and Krogius have each reported one case. Krogius believes that the tumors are of mesenchymal origin and that they contain varying forms of connective tissue. He recommends that they be removed through a posterior incision the same as a tumor of the kidney. A great many retroperitoneal tumors cause symmetric abdominal enlargement; the tumor being rather soft probably accounts for the not infrequent diagnosis of ascites due to malignancy or peritonitis. Occasionally a small area of the tumor undergoes degeneration and causes marked elevation in temperature; in such case tuberculous peritonitis is a probable diagnosis.

Retroperitoneal lipomas usually grow slowly and may attain considerable size before they are noticed by the patient. They rarely cause pain and the patient seeks relief only when pressure symptoms develop.

The symptoms are variable. In the twelve cases reported by Masson and Horgan six of the patients first noticed a sensation of pressure in the abdomen. Six patients complained of slight intermittent abdominal pain and two of severe rather constant pain in the lower lumbar region. Six complained of qualitative food distress and occasionally vomited. Five complained of con-

*Submitted for publication January 29, 1927.

stipation, and six had lost weight. In the cases in which areas of the tumor have undergone degeneration, the symptoms are usually acute, namely fever, localized tenderness and an increase in the number of leukocytes.

The records of the Mayo Clinic show that twenty-two patients with retroperitoneal lipoma have been operated on since 1910 with removal

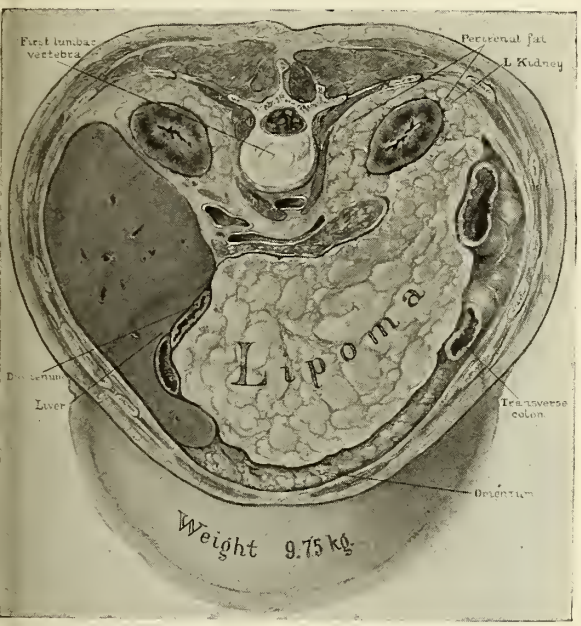

Fig. 1. Diagrammatic sketch showing site of origin of tumor and relation to abdominal viscera.

of all or part of the tumor. The three that have been removed during the last two months by C. H. Mayo are reported herewith.

REPORT OF CASES

Case 1.—A farmer's wife, aged forty-five, was examined at the Clinic August 2, 1926. Her chief complaint was enlargement of the abdomen with bloating and constipation. Her past history was not significant. Menstrual periods were regular. The increase in the size of the abdomen had become much more noticeable during the last eleven months. She had lost 7 pounds in weight.

The urine was normal. The hemoglobin was 66 per cent; the erythrocytes numbered 4,530,000 and the leukocytes 7,300. The blood Wassermann test was negative. Roentgenograms of the chest were negative.

A tentative diagnosis of ovarian tumor with probable malignant change was made and exploration advised. At operation, September 2, a retroperitoneal tumor which had pushed forward between the stomach and transverse colon was found. Grossly it appeared to be sarcomatous but microscopically it proved to be lipoma. The tumor, which weighed 17.5 pounds, was removed. It had extended well into the pelvis, the transverse colon being displaced downward. The postoperative convalescence was uneventful. The patient left the hospital on the twelfth day and was dismissed from observation on the fifteenth day in good condition (Figs. 1 and 2).

Case 2.—A farmer came to the Clinic in May, 1926, complaining chiefly of enlargement of the abdomen which he had first noticed seven months previously. During this time he had suffered considerably with

Fig. 2. Gross specimen of lipoma.

abdominal distress characterized by a burning sensation in the epigastrium following meals; this was alleviated somewhat by soda. During the last two months he had experienced a marked sense of fullness throughout the abdomen, so much so that he ate only twice daily. Occasionally following the evening meal he became nauseated and vomited. No blood was noticed.

The patient's weight at the time of examination was 3 pounds more than normal. The abdomen was markedly enlarged and was symmetric and smooth. A fluid wave could not be made out. The urine was normal. The hemoglobin was 60 per cent, the erytrocytes numbered 4,270,000 and the leukocytes 6,700; the differential count was negative. The blood Wassermann test was negative. A test-meal showed combined acids 44, free hydrochloric acid 28; the content

in the stomach was 75 c.c. Roentgenograms of the stomach and chest were negative. The systolic blood pressure was 140, the diastolic 85. The patient's general health was good. Abdominal malignancy was diagnosed and he was sent home.

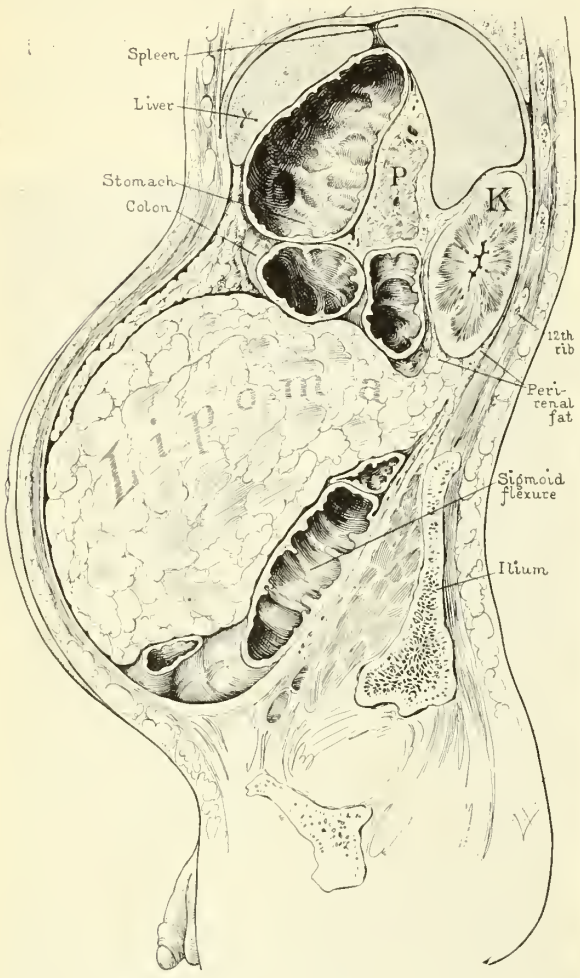

Fig. 3. Site of origin and relation of tumor to the abdominal viscera.

September 3, four and a half months after the patient's first visit to the Clinic, he returned. His general health remained good, although the symptoms first described were still present. The enlargement had increased and there had been a gain in weight of 6 pounds. The laboratory examinations were much the same as at the first visit. Exploration was advised.

At operation a huge retroperitoneal tumor was found. The ascending and transverse colon were firmly adherent and flattened over the right side of the tumor, the small intestines were crowded backward and to the right. The abdominal cavity was filled from the diaphragm to the pelvis. The omentum could not be distinguished. The tumor, unlike the one in Case 1, was definitely pendunculated and contained a great deal of connective tissue. It was removed in pieces from 2.5 to 12.5 cm. This tumor weighed 18.5 pounds. There was apparently from 60 to 80 c.c. of free fluid in the abdominal cavity, of light amber color.

Because of the shock and loss of blood the patient was transfused (500 c.c.) following the operation. The postoperative convalescence was satisfactory and the patient was dismissed on the twenty-eighth day after the operation. The pathologist's report was fibromyxolipoma (Figs. 3 and 4).

Case 3.—A woman, aged fifty-one, visited the Clinic the first time in 1917, at which time a diagnosis of central nervous system syphilis was made and treatment given. This treatment had been given intermittently until three years previously. She came again to the Clinic in October, 1926, because of enlargement of the abdomen and bloating which had been noticed for eight months. The enlargement had increased more rapidly during the last three months, and because of the accumulation of gas in the stomach following meals, she had refrained from taking all the food she wanted. There was no qualitative food distress and no jaundice. At times there was a dull aching pain in the lower abdomen on the left side. Constipation was marked.

Fig. 4. Gross specimen.

The patient was slender and appeared slightly undernourished. She weighed 120 pounds; normal weight 125 pounds. The systolic blood pressure was 118 and the diastolic 70. The temperature was normal. An irregular mass filled the upper part of the abdomen and was not removable. Examination of the urine was negative. The hemoglobin was 72 per cent; the erythrocytes numbered 4,350,000 and the leukocytes 7,000.

The gastric acids were normal. A provisional diagnosis of ovarian cyst, mesenteric cyst or retroperitoneal lipoma was made and operation advised.

At operation a large tumor in the mesentery of the descending colon was found. The mesentery of the descending colon was divided and the tumor shelled out easily and with little hemorrhage. Exploration of the abdominal viscera was negative. The tumor weighed 1,600 gm. On pathologic examination the tumor was diagnosed lipoma. The patient recovered uneventfully and left the hospital on the fifteenth day after operation (Fig. 5).

SUMMARY AND DISCUSSION

The symptoms of retroperitoneal lipoma are variable: of the twelve cases reported by Masson and Horgan six patients first noticed a sensation of increased pressure in the abdomen, six complained of slight abdominal pain and two of pain in the back. In only one case was the pain severe. Six complained of food distress and occasionally vomited. Five had quite obstinate constipation and six had lost weight. In cases

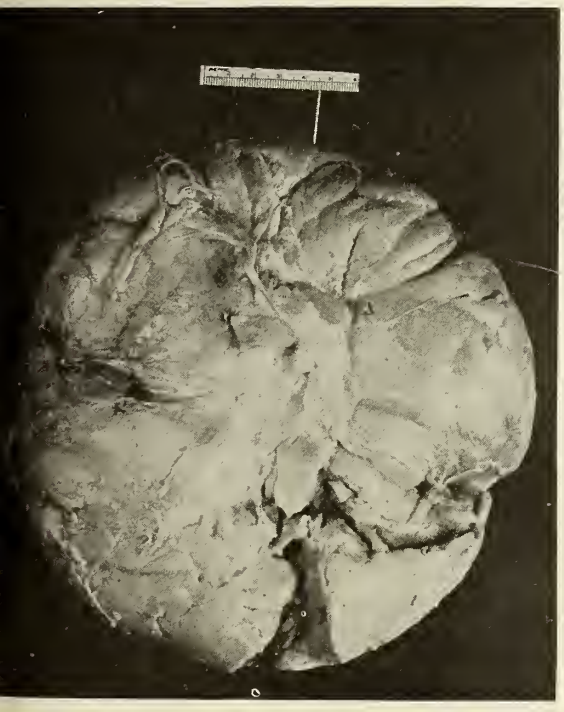

Fig. 5. Gross specimen.

which the lipoma was degenerating the symptoms were acute, with fever, localized tenderness and an increase in leukocytes.

The tumors were more common in females; about 72 per cent were females and 28 per cent males. The age was from forty to sixty years. The youngest patient in Masson and Horgan's series was forty and the oldest seventy-two. The shortest history was ten months, the longest ten years; the average was about seven years.

About 79 per cent of the tumors were in the abdominal cavity and 21 per cent in the pelvis. They usually arise from the pararenal fat, but may arise from the renal capsule, the mesentery, the pararectal or retrorectal fat. They occur quite equally on both sides of the abdomen, possibly more often on the left than on the right. The types vary, von Wahlendorf found pure lipoma in 54 per cent of the cases and mixed tumor in 46 per cent; 14 per cent showed sarcomatous change. Two of Masson and Horgan's twelve cases showed sarcomatous change.

The ultimate prognosis is usually grave. In von Wahlendorf's series the operative mortality was 25 per cent; in Masson and Horgan's series it was 16 per cent. Recurrence is not uncommon and often with recurrence there is sarcomatous change.

We believe that retroperitoneal lipomas are more common than has been supposed, and that exploration should be carried out in all cases of abdominal tumor, particularly if the enlargement has been slow and no organic disturbance can be elicited. Retroperitoneal lipoma before removal often resembles sarcoma, grossly. A specimen should always be examined microscopically and if no malignant change is found the tumor is usually removed.

We removed the tumors through a right rectus incision 2.5 cm. from the umbilicus. This affords good exposure for exploration and can be extended as desired. It is apparently much better than the posterior incision advised by Krogius, which would be feasible for exploration of small tumors lying near the kidney. In our three cases the tumor spread within the mesentery of the transverse colon. Their origin was therefore on the left side of the spine. In two of the cases the omentum was taken up in the great spread of the tumor.

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"NARCOSAN" AND DRUG ADDICTION

Newspapers have carried a story concerning the discovery by "Dr." A. S. Horovitz of a new remedy for drug addiction known as "narcosan." Since 1913, Horovitz has been identified with attempts to promulgate cures for all sorts of disorders by mixtures of lipoids and vegetable substances of the nature of nonspecific proteins. Included in his records are the Horovitz-Beebe "cure" for cancer, the Merrell Proteogens for the cure of practically everything, and more recently "narcosan," originally brought out about 1920 under the name of "Lipoidal Substances." Horovitz' present effort to promote "narcosan" as a cure for narcotic addiction is supported by an investigation by Dr. Alexander Lambert, ex-president of the American Medical Association, and Frederick Tilney, one of the editors of the Archives of Neurology and Psychiatry. The paper appeared in the New York Medical Journal and Record. It was rejected by the Journal of the American Medical Association because the Council on Pharmacy and Chemistry rejected the product known as "Lipoidal Substances" in 1921, because up to the present time the product has not been resubmitted, and is apparently still of unestablished composition, and because the clinical investigations are not set forth in such a manner as to indicate even ordinary controls. (Jour. A. M. A. Dec. 18, 1926, p. 2097.)

BORIC ACID AND A HOSPITAL ACCIDENT

In a hospital, through a confusion of technic among three nurses, infants in the nursery were apparently given boric acid solution instead of drinking water and six died. Such accidents will no doubt be prevented in the future by rulings relative to the manner of preparing water for drinking purposes and as to the bottling and labelling of all solutions of medicinal value. Compared with phenol, cresol or mercury preparations, boric acid is relatively non-poisonous, but cases are recorded of death, even of adults, when considerable quantities of saturated boric acid solutions have been introduced into the body. In reported cases, from 1 to 3 Gm. have produced serious symptoms, and from 15 to 30 Gm. have been fatal to adults. In the recent accident, each baby must have received from 15 to 60 c.c. of a saturated solution of boric acid. (Jour. A. M. A. March 12, 1927, p. 841.)

ZINC STEARATE INSUFFLATION

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Minneapolis

Although cases of insufflation of zinc stearate among infants have been reported from time to time over a period of about eight years, we have felt that it was worth while to report the cases which have been under our observation. Our reasons for reporting these cases are, to emphasize again the relative frequency of this condition, the severity and character of the symptoms and the results obtained in these patients.

In reviewing the literature, the first recognized case reported is found to be that of Murray Bass.[1] A previously well ten months old infant spilled zinc stearate powder on his face, and a few minutes later was found in a condition of collapse. When a physician arrived, the child was cold and pulseless, and his breathing was very shallow. He was revived, and appeared to be recovering when, after a period of twelve hours, he again went into collapse, both lungs filled with râles, breathing became bronchial in type, the temperature rose to 102 degrees, and just before death the respiratory rate reached 104. Two points emphasized in this case were: (1) the presence of marked air hunger and (2) a respiratory rate higher than the temperature.

A comprehensive report of twelve cases by Herman and Ochsner appeared in the American Journal of Diseases of Children in 1922. In all of these the onset was sudden and stormy with symptoms of partial to complete asphyxia lasting from twenty-four hours to two or three weeks. The important symptoms noted were rapid respirations, cyanosis, rapid pulse, intermittent temperature and abdominal distension. In eight cases there was an initial partial asphyxia followed by gradual recovery without definite involvement of the lungs. The treatment was that of bronchopneumonia—viz., abundance of sunlight and fresh air, liquid diet, hydrotherapy and good elimination. In experimental work on dogs Herman and Ochsner[2] insufflated zinc stearate through a tube passed to a point just beyond the vocal cords, while the animals were under ether anesthesia. The dogs were ill for a few days with loss of appetite,

temperature 101-103, a brassy cough and dyspnea of short duration. The lungs of the dogs killed three days after insufflation showed raised whitish areas in the lower and middle lobes with microscopic findings of congestion and increase of interstitial tissue, a typical picture of catarrhal bronchopneumonia. Cultures of lung tissue were sterile.

In January 1923, a case of pneumonia from inhalation of zinc stearate talcum powder in an eight month infant was reported by William Edmonds.[3] O'Keefe[4] found that the victims were all active infants from eight months to one year of age, who, in playing with a powder box, received a shower of powder on the face, a part of which was inhaled. In a few hours he found an increase in pulse and respiration, followed shortly by an elevation of temperature. Some cases resembled laryngeal diphtheria while others were like bronchopneumonia. In his cases the white blood count remained normal, there were no definite signs in the chest by *x*-ray and the temperature broke by crisis in the non-fatal cases. In treating these children, O'Keefe took into consideration the effects of zinc both as a systemic poison and as a local irritant and he resorted to such measures as gastric lavage, free catharsis, expectorants and croup tents besides general supportive treatment.

A committee led by Abt, Woodward and Leech was appointed by the American Medical Association to investigate the incidence and morbidity of zinc stearate inhalation. In a report[5] by these men it is stated that up to that time there had been one hundred and thirty-one cases of poisoning, twenty-eight of which had proved fatal. Their conclusions were that (1) zinc stearate is not necessary, (2) that its use should be discouraged by the medical profession and (3) that manufacturers be compelled to use self closing containers with uniform caution labels.

During the last five years we have had eight cases of zinc stearate insufflation under our care. One of these children died, three of them were acutely ill for from two to five days and four were ill only a few hours.

In all of these cases the symptoms at the onset were severe and alarming. The first symptoms to appear in all of them were marked dyspnea with rapid respirations, almost constant brassy cough, hoarseness and apprehensiveness. These symptoms persisted in the four mildest cases from one-half to three hours, though gradually diminishing, at the end of which time the children were apparently perfectly well. During this time they did not run any temperature and physical examination revealed nothing. Except for the lack of temperature and the absence of throat findings these children presented a picture very much like laryngeal diphtheria.

In the other four children the course was different. The respiratory difficulty, the brassy cough and hoarseness persisted much longer and other symptoms and findings appeared. At the end of four to eight hours the children began to run a temperature which varied from 100 to 104. Physical findings of a diffuse bronchitis appeared with coarse, moist bronchial râles heard over the entire chest. In the three children who recovered, these findings persisted for several days, the temperature had a morning and evening variation and finally went down by lysis. The marked dyspnea gradually subsided, the physical findings of a diffuse bronchitis gradually cleared up, and they made a complete recovery. The hoarseness and laryngeal symptoms disappeared before the bronchial findings and symptoms.

In the child that died, besides the findings of a diffuse bronchitis which were already present, fine subcrepitant râles were heard, at the end of eighteen hours, in both bases posteriorly. The child's respirations became more and more rapid, evidences of consolidation appeared and, at the end of twenty-four hours, there were well-defined areas of bronchopneumonia in both sides. The child became more and more toxic, cyanosis appeared and death occurred in forty-eight hours after the onset. This child appeared more toxic from the beginning than the other children.

In studying these eight cases it is seen that in all of them we had evidence of severe laryngeal irritation, in four of them evidence of bronchial irritation as well, while in one of them a massive bronchopneumonia developed. Although the resistance of the child is probably a factor in determining the extent and severity of the illness following zinc stearate aspiration, nevertheless we think that the biggest factors are the

amount of the powder aspirated and the depth in the bronchial tree to which the zinc stearate descends. In the four children described, in which the symptoms were entirely laryngeal and in which the symptoms were comparatively short in duration, the powder probably did not go beyond the larynx, while in the other four, some of the powder was aspirated into the bronchi and in one actually reached the lung tissue.

It seems as though the symptoms which develop in zinc stearate insufflation are due not only to mechanical irritation but also to a toxic factor present in zinc stearate, the toxicity being probably the predominant element. The small amount of powder which these children usually aspirate would not be enough to cause the profound disturbance that is present, from purely mechanical irritation.

DIFFERENTIAL DIAGNOSIS

The diagnosis is not usually difficult, as a history of zinc stearate aspiration is almost always present. The conditions which need to be considered when a history is not obtainable are: (1) simple croup; (2) laryngeal diphtheria; (3) enlarged thymus; (4) foreign body in the larynx. In simple croup the respiratory rate is usually much slower than in zinc stearate aspiration and there is also usually a reddened throat present. The use of steam inhalations will ordinarily relieve the symptoms of croup very quickly and this is not true in zinc stearate laryngitis.

If there is not pharyngeal diphtheria present, it may be difficult to differentiate laryngeal diphtheria from zinc stearate aspiration in the early stages.

The dyspnea which is sometimes present in an infant with an enlarged thymus might have to be considered, but the hoarse cry and brassy cough are not usually present.

The presence of a foreign body, other than zinc stearate, in the larynx may give rise to dyspnea, hoarseness, and brassy cough, but the toxic symptoms are usually not present.

TREATMENT

The children we have had under our care suffering from zinc stearate aspiration were given much the same routine care, with additional treatment as indicated. The routine procedure consisted in (1) placing the child in bed with the head lowered; (2) continuous steam inhalations; (3) atropine sulphate every four hours by mouth, in dosage according to the age of the child; (4) plenty of fresh air, maintaining the temperature at 70 degrees to prevent chilling; (5) forcing fluids; (6) hydrotherapy for fever.

CASE REPORTS

Case 1.—Baby M., age eleven months. Female. While shaking a can of zinc stearate a small amount of the powder went into her face. She immediately began coughing, choked and after a few minutes became slightly cyanotic. The cough was persistent and of a brassy character. The mother noticed that her voice was hoarse. The child was seen by one of us (E. D. A.) about one hour after the onset. At this time the child was pale, appeared apprehensive and had a constant, irritating brassy cough. The respirations were seventy per minute, the temperature was 100 (R). Physical examination showed coarse bronchial râles over the entire chest. The child was given the treatment outlined previously but her condition did not improve. At the end of twelve hours her temperature was 103 and remained between 103 and 104 until her death. Her respirations were eighty per minute, she was slightly syanotic and she had physical findings of a diffuse bronchitis. At the end of eighteen hours fine subcrepitant râles were heard at both bases and the general condition of the child was worse. At the end of twenty-four hours she had definite areas of bronchopneumonia in both bases. Her condition became more and more grave, her respirations were very shallow and the rate reached ninety-four before death occurred, about forty-eight hours from the time she aspirated the zinc stearate.

Case 2.—Baby M., age eight months. Male. A small amount of zinc stearate was aspirated by this boy and immediately he developed rapid respirations, dyspnea, brassy cough and marked pallor. When seen, two hours after aspiration, there was no temperature but a few coarse râles were heard in the chest. The child was placed in the hospital and given the routine treatment. Six hours after the onset the temperature was 100.6 (R). The respirations were still rapid but the choking and brassy cough were less. For the next four days the temperature varied from 100 to 102.6 (R). There were typical physical findings of a diffuse bronchitis present. The general condition of the child was good. After the first few hours the respirations dropped to between thirty and forty and after four days gradually came back to normal. *X*-ray pictures on the third day showed no areas of bronchopneumonia. White blood counts taken on the second and third days were 9,600 and 10,800. On the fifth day the child seemed perfectly well and there were only occasional coarse râles heard, and the child was discharged.

Case 3.—Baby B. Female. Age ten months. Aspirated a small amount of zinc stearate. Almost immediately choking, dyspnea, harsh, persistent cough and evidences of fear and apprehensiveness appeared. The child was examined about one-half hour after the

onset and there were no physical findings present. The child was pale and seemed to be somewhat in shock. The temperature was 97 (R). She was placed in the hospital and given the usual treatment. Coarse bronchial râles were present in the chest when the child was examined four hours later. At this time the temperature was 100 and this gradually rose to 102 and varied between 100 and 102 for the next two days. It then went down by lysis. The respirations varied from thirty to sixty. At the end of four days the chest was clear and the child seemed perfectly well. *X*-ray of the chest on the second day was negative.

Case 4.—Baby S. Age five months. Male. This infant was first seen by Dr. Kenneth Phelps about fifteen hours after the aspiration of zinc stearate. He referred the case to me at that time. The parents stated that the child had choked and coughed at the time of the aspiration, and that since then it had been hoarse, had breathed rapidly, refused food and coughed a great deal. The temperature was 100 (R). Physical examination revealed a few coarse bronchial râles. The respirations were thirty. The child did not appear very sick but was sent to the hospital for treatment and observation. It remained there for two days, during which time the temperature did not go above 100.6. The râles disappeared at the end of eighteen hours, the respirations became normal and the child was discharged.

Cases 5, 6, 7, 8.—These cases are reported together as the symptoms and findings were practically the same in all four. The ages of the children were six, ten, thirteen and fifteen months, respectively. In all of them the symptoms appeared almost immediately after the aspiration of zinc stearate. Dyspnea, choking, rapid respirations, brassy persistent cough and a look of fear were present in all of them. These symptoms lasted for from one-half hour in Case 7 to two hours in Case 8. The symptoms gradually disappeared and the children became perfectly well. There was no temperature and physical examination revealed nothing in all four cases.

SUMMARY

1. Zinc stearate aspiration occurs much more frequently than it should. It's use as a dusting powder for infants should be discontinued. If used at all, it should be in cans which automatically close. Every mother, on leaving the hospital with a new baby, should be warned against the use of zinc stearate.

2. In many instances only the larynx is involved, the cases are not fatal, and are of rather short duration.

3. If the zinc stearate reaches the bronchi it causes a severe bronchitis which may develop into a bronchopneumonia.

4. If the powder reaches the lung tissue, it may cause a severe broncho-pneumonia.

5. The symptoms arising from zinc stearate aspiration are probably due to both the mechanical and the toxic effects of the powder.

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USELESSNESS OF INSULIN BY INUNCTION

Attempts to give insulin by mouth, perlingually, by duodenal tube, intratracheally, by inhalation, and by-rectum, either in solution or in suppositories, have given results which in the main are either mechanically difficult, inconclusive, inconstant, or wasteful of the drug. An investigation has recently been made to decide whether insulin inunctions would be of any value in the treatment of human diabetes. As much as 1,000 units of insulin dissolved in almond oil was rubbed for a period of one hour into the skin of the abdomen, chest and arms with entirely negative results. Other vehicles were used with equally negative results. On the basis of this evidence the conclusion must be that insulin inunctions "are useless as a therapeutic measure." (Jour. A. M. A., Feb. 26, 1927, p. 652.)

NON-SPECIFIC PROTEIN ADMINISTRATION

The intravenous injection of typhoid vaccine with an initial dosage of 50 millions, each subsequent dose increased by 100 millions, and given at four day intervals, is one of the most reliable means of producing fever. It is a drastic measure and one should be certain that the patient's vital organs are sufficiently healthy to withstand the attacks of fever thus produced. The intramuscular injection of milk skimmed by centrifugalizing and sterilized by boiling in the water bath for ten minutes, has good pyrogenic properties without great toxicity. The usual dose is 5 c.c., gradually increased to 10 c.c.. With those who have a tendency to strong febrile reactions, small doses should be given at first. The injections must be adjusted to avoid severe reactions and anaphylactic shock. (Jour. A. M. A. Jan. 8, 1927, p. 119.)

THE SIGNIFICANCE OF CERTAIN SIGNS AND SYMPTOMS IN CASES OF SURGICAL MASTOIDITIS*

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In a study of surgical mastoiditis some years ago, it was found that in only 40 per cent of the cases could it have been easily diagnosed; in these all the typical signs and symptoms were present. In the remainder, however, in which the syndrome is not definite enough for prompt conclusion, it is necessary to weigh the evidence and make decisions carefully. To expect to fit the textbook description of a disease into the dimensions of a given case in all instances, is to court great disappointment very frequently. I wish to present here, very briefly, my views of the significance of certain symptoms and signs as encountered in cases to be classified rather as subacute than acute and not chronic suppurative otitis media and mastoiditis. The acute fulminating type and the chronic type present individual problems.

THE PATIENT

Too frequently, perhaps, the patient may be overlooked when disease is being considered, and, after all, it is he who is the most interested. One should be able to classify the type of patient being dealt with as to his temperament, his susceptibility to pain, his resistance to infection and disturbed function within the first few months. Thus the experienced observer can see something in the appearance of the patient, "not easily reducible to words," as Kerrison says, which may suggest malingering or, conversely, the patient may tend to make too little of his illness. In other words, the patient may not look ill, or the appearance may belie the history. When a patient looks as if he not only is in good health, but actually feels quite well, less significance may be attached to what might otherwise be considered a prolonged convalescence. On the other hand, when symptoms and signs are disappearing and the patient is not gaining in health and is not "looking well" more significance must be attached to symptoms or signs. In many instances the latter have been of more value to me than the laboratory aids. One should see the patient as an organism in a state of disease rather than only through the hole in the speculum.

DURATION OF SYMPTOMS

It has been shown often that there is no fixed schedule for resolution in cases of otitis media and mastoiditis. Other signs and symptoms are far more characteristic, and the observer must be governed by his judgment.

Deafness.—A purely middle-ear type of deafness of varying degree of severity may be expected in any case of otitis media. If the cochlear or vestibular branch of the auditory nerve is affected, greater importance must be attached to deafness as a sign or symptom. Fortunately, other signs and symptoms are present in surgical conditions. Loss of hearing may not call for intervention any more than loss of hearing with mumps, but it is a symptom to consider.

Pain.—Pain, although an important symptom, must be carefully considered in its proper relation to other symptoms and signs. What one patient might consider pain another might disregard. It is usual to have pain a prominent symptom in the very early stages of the involvement especially when the mastoid is of the small-cell variety. The cause may be considered as intracellular pressure due to swelling of the membranes lining the cell. As the membrane begins to secrete more rapidly, the pain gradually disappears.

There are two types of pain encountered: a dull aching sensation, and a sharp, neuralgic pain. The dull pain may be present in either the small-cell, or large-cell mastoid. It may be complained of at any time of the day, usually more so when the patient is physically tired. It can be taken as a symptom indicating indolence and slow resolution of the disease. It may be situated over the mastoid or over the parietal region. Pain that affects the entire head may be looked on as due to toxemia, or involvement of the dura.

Pain occurring at night has been found in nearly all instances to be due to a parasinous, or extradural abscess. This, I believe, is a very important symptom. The mechanics of the pain is not clear unless it is due to congestion from the dependent position of the patient. Usually the pain gradually disappears if the patient is up and around.

Sharp pains are encountered when there is irritation of the fifth nerve. One striking case

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stands out in my experience: that of a little boy eight years old, who complained of a sharp pain of short duration twice daily. The pain started in the lower jaw and extended to the first branch of the fifth nerve. The mastoid had been incompletely operated on recently. Since there was no other explanation for the pain, the mastoid was explored, although its general appearance suggested that the condition was satisfactory. The zygomatic cells were found to be extensively affected, and the dura was red and congested when exposed in Trautman's triangle. Further exposure was made to allow for decompression. The pain did not recur. Involvement of the zygomatic cells has, in previous cases, caused sharp pain, but in this case I believe that the congestion of the dura was the cause.

Affection of the sphenopalatine ganglion, as observed in certain patients with upper respiratory infections, must not be overlooked as a cause of sharp pain.

Variations of temperature.—Rise in temperature must always be regarded with suspicion, but it is difficult to evaluate it as a sign because persons vary greatly in respect to pyrexia. The septic type of temperature curve, and the continuous high temperature, are not considered in this instance. With a rise in temperature there is usually sufficient other evidence associated to make it possible to estimate its significance correctly.

Character of discharge.—Much importance can be attached to the character of the discharge, particularly in cases past the really acute stage of the infection, in which a serous or serosanguineous discharge is the rule. It is in the acute stage that the bacteriologic factor is of the most importance because it is then that pure cultures may be expected. Except for specific infections like diphtheria, in which a definite therapeutic measure is imperative, the identity of the microorganism does not influence the management materially unless possibly earlier interferences might be indicated when the Type III pneumococcus is encountered. Kerrison also believes that too much can be made of the bacterial factor.

Ordinarily a mucopurulent stringy discharge may be regarded as a sign of approaching resolution, particularly if the patient has not been allowed to inflate the eustachian tubes himself. Considerable purulent discharge, too much in fact to be attributed to disease of the middle ear alone, can be regarded as suggestive that operation on the mastoid may be necessary. The idea of avoiding a chronic suppurative process and preventing varying degrees of middle-ear deafness from scar formation, is always uppermost in one's mind. In itself, this could be the only indication for well-directed surgical interference. Suggestive, too, is the varying amount of discharge, a scanty discharge being followed by discomfort and a subsequent free discharge bringing relief. Rise in temperature, before the discharge takes place, may be looked on as important evidence.

PHYSICAL CONDITION OF THE MIDDLE EAR AND MASTOID

The usual findings in a fairly typical case of suppurative otitis media with mastoiditis are generally well known, and are defined as purulent discharge, drooping of the membranous meatus on the posterior superior wall of the canal, and tenderness on pressure over the mastoid antrum, tip and emissary vein. Edema may also be present, or swelling of the soft parts over the mastoid. In the presence of all these signs, however, the diagnosis is perfectly obvious. It frequently happens that only one of the more common signs is present, and then it becomes more difficult to establish a diagnosis.

When very definite drooping has been present, sometimes to the extent of closing off drainage from the middle ear, even though other signs have been absent, I have always found the mastoid cells involved. The tenderness over the mastoid may be absent as a result of the anatomic conformation and type of the cells in the mastoid process. The drum may be intact, presenting the picture of a latent suppurative otitis media with surgical mastoiditis.

Kerrison has coined the term "dripping drum" which describes in a word what would be difficult to explain in a paragraph. The dripping drum may exist without drooping of the membranous meatus. Perhaps myringotomy has been repeated without the desired effect.

After the discharge has been cleared out more will immediately present itself. This means that the amount of pus cannot be accounted for by

the involvement of the middle ear alone but is an overflow from the mastoid antrum and cells. Nothing short of a mastoid operation will give satisfactory results.

Situation of the perforation.—The site of spontaneous perforation may be important. The anterior inferior perforation is not so significant, for instance, as the perforation situated posteriorly and above Schrapnell's membrane, because if apparent resolution took place there would still remain the danger of cholesteoma from extension of the epithelium into the adjacent antrum. In other words, it might be important to anticipate trouble and avoid it, particularly if resolution of the disease did not take place in a reasonable length of time and in a satisfactory manner.

When myringotomy is performed, the perforation is made in the most desirable position for drainage. If spontaneous rupture of the drum has taken place and the perforation is found in a position other than the posterior quadrant, even though there may be some drooping, myringotomy after the method of Kerrison will occasionally obviate the necessity for further interference.

Mastoid tenderness.—Tenderness is always a subjective sign but when the patient's reaction to pain has been satisfactorily classified, it can be interpreted as practically an objective sign. It is best elicited by using the same amount of pressure on both mastoid processes and watching the facial expression. There will be little difficulty in defining the site of the discomfort. One can exert sufficient pressure over a normal mastoid process to cause pain, but if the pressure is slowly applied and steadily increased, more accurate information can be obtained.

In the absence of definite physical change in the middle ear, tenderness of the mastoid may or may not be of great significance. In conjunction with positive roentgenographic findings and a history of recent trouble in the ear, or of infection in the upper respiratory tract, mastoid tenderness may point to the presence of surgical mastoiditis without apparent otitis media, as Hempstead has shown.

Edema and swelling over the mastoid process.—If there is edema or swelling over the mastoid, and if extension from a furuncle can be ruled out from the history and roentgenographic findings, one can expect that the mastoid process is affected. If there is any uncertainty, the diagnosis will be established after a delay of a day or more.

ROENTGENOGRAPHIC FINDINGS

Good clear roentgenograms can give the observer very valuable information and should always be used when possible. It is too much to expect a positive diagnosis to be made from the roentgenograms, although it is sometimes possible. They may show (1) the type of mastoid, whether small-cell, large-cell, or acellular, and (2) the effect of the disease such as clouding, or the breaking down of intercellular septa with coalescence.

If it is shown by roentgenograms that the mastoid is of the small-cell variety, all painful symptoms may be found to be increased and more easily explained. The physical limits to which the operative procedure must be extended are recognized. In case the mastoid is shown to be the large-cell variety, particularly with cells behind or over the knee of the sinus and an extensive zygomatic arrangement of cells, it is evident that any interference short of complete exploration and eradication of the disease is inadequate. In the case of zygomatic cells, painful symptoms may be absent.

Roentgenograms of both mastoids should be available for comparative study. Often there is not much difference in conformation unless there has been a history of ancient otitis media. It very rarely occurs that one mastoid is found to be acellular or greatly different from its fellow under normal conditions. One expects to find the picture of a very dense contracted mastoid on the side affected by chronic suppurative otitis media.

In the earlier stages, clouding of the roentgenograms must not be taken too seriously but used as auxiliary information. Definite destructive processes are readily recognized and must be given face value.

SIGNS OF EXTENSION TO THE BRAIN, AND LATERAL AND SIGMOID SINUSES

Such symptoms and signs could not fall in the scope of this paper and therefore will not be considered. I shall, however, mention four special signs: (1) choked discs which may be present with a parasinous abscess without intradural extension; (2) facial paralysis which may appear as a result of involvement of the nerve within the middle ear, or meningitis within the internal

auditory meatus; (3) homolateral palsy of the abducens nerve with or without much headache (Gradeningo syndrome), which may result from involvement of the meninges on the anterior surface of the apex of the petrous portion of the temporal bone, and (4) irritation of the vestibular branch of the auditory. If examination shows that the labyrinth is functioning, or hypersensitive responses are obtained, the condition may be attributed to irritation from otitis media. In all these instances surgical interference is justifiable but it must be admitted that spontaneous resolution may take place.

LABORATORY AIDS TO DIAGNOSIS

In the general physical examination which all patients should undergo before major surgical operations are undertaken, studies of the blood, including differential leukocyte count, estimate of the hemoglobin, and, if indicated, blood culture, should be carried out. It has been everyone's experience that when the results fit into the clinical picture, the tentative diagnosis is made without difficulty. At times the laboratory aids are very disappointing and clinical judgment must be relied on, or the findings may be disconcerting and if they do not fit into the clinical picture, they should be repeated, and evaluated carefully.

SUMMARY

In certain cases that can be classified as subacute suppurative otitis media with mastoiditis, the absence of many of the usual symptoms and signs may make a definite diagnosis difficult unless the evidence available is evaluated in a judicial way. Certain symptoms and signs stand out as important. Too great dependence must not be placed on the laboratory aids. In the final analysis, the diagnosis of the real condition of the patient rests on one's clinical and surgical judgment.

EPHEDRINE

The Council on Pharmacy and Chemistry reports that the A. M. A. Chemical Laboratory has found the ephedrine sulphate received from Eli Lilly & Co. to be of acceptable quality. The advertising claims for Ephedrine Sulphate-Lilly have been revised in accordance with the recommendations of the Council, and therefore the Council accepts Ephedrine Sulphate for description in New and Non-official Remedies and lists Ephedrine Sulphate-Lilly as a brand which complies with the New and Non-official Remedies' standards. (Jour. A. M. A. March 19, 1927, p. 924.)

THE EVOLUTION OF NEPHRITIS: ITS PROGNOSIS AND TREATMENT*

Part III

THE TREATMENT OF NEPHRITIS

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A discussion of the treatment of nephritis does not permit the laying down of any hard and fast rules. Each patient presents an individual problem in management. It may be profitable, however, to discuss the management under several general headings. Before proceeding to this discussion, the admonition not to forget the patient in our zeal to treat the lesion in the kidneys is not out of place. Chronic nephritis is so closely linked with general cardiovascular degenerative processes, that these must receive consideration along with changes in the kidney. Likewise, in nephritis with edema the disordered water and salt interchange in the tissues in which the edema occurs and disordered cell metabolism may be jointly responsible with the kidneys for the persistence of the edema.

With these ideas in mind, we shall turn our attention to the general measures involved in the treatment of nephritis.

1. One of the questions first to be settled is that of eradication of known foci of infection. To arrive at a correct decision on this question requires circumspection and an attitude inclined to conservatism. Since upper respiratory and tonsillar infections play an important rôle in the etiology of nephritis, it is important for the future welfare of the patient that every precaution be taken to protect him against possible damage resulting from the recurrence of these infections. This course should be pursued for two reasons. First, the nephritis patient has a noteworthy lack of resistance to the usual seasonal upper respiratory infections. Second, even though a patient may be making an excellent recovery, if he develops an upper respiratory infection or tonsillar infection, his nephritis is re-

*From the Medical Division of the Nicollet Clinic, Minneapolis. Part III concludes the series by the author on The Evolution of Nephritis, which began in the March number.

activated and he may revert to the condition he was in three to six months or even a year before his infection. In an out-patient clinic several instances of this kind are observed each winter season. Because of these possibilities, everything that can be done to restore the nose and paranasal sinuses to a normal condition should be attended to. Likewise, infected tonsils should be removed when the patient is in good condition and the nephritis is in a quiescent stage. There is more reason for hesitation concerning the removal of dental foci, since the etiological relationship of these infections to nephritis is less definite and is even open to question.

The attitude toward the removal of foci of infection may be summed up with the statement that their removal should be undertaken, not with the expectation of curing the nephritis, but rather for the purpose of protecting the patient from the evil consequences which might result from future infections.

In pyelo-nephritis and focal nephritis a more radical attitude toward eradication of all infective foci is justifiable. It may, indeed, be undertaken as a curative measure, but the treatment of pyelo-nephritis is not within the scope of this paper. It should also be recognized that furuncles, carbuncles, hand and foot infections and other infections all create an additional hazard in nephritis and should receive early and scrupulous attention. From what has been said concerning respiratory infection, it follows that the nephritis patient should receive all possible protection from exposure to the elements during the winter months while he is out of doors. This is best afforded him by seeing that light woolen underclothing and stockings and the proper footwear are worn.

2. Restriction of physical activity. In acute nephritis, rest in bed is imperative. In the essential edematous nephritis a one to two months' period is usually necessary, depending upon the severity of the nephritis. It is desirable that it should be enforced until the edema has entirely subsided, as evidenced by the marked lessening of casts and white blood cells and the complete or almost complete disappearance of red blood cells in the sediment. This ideal state, however, is not always possible to attain and it is at times undesirable to enforce rest for too long a period. At times when edema has disappeared and renal function reached a normal level, even if there is a moderately active degenerative process, nothing more is to be gained by keeping the patient in bed. At this stage the kidney does not appear to be in any way compromised by a reasonable amount of activity, even to the extent of the patient's engaging in his usual occupation, if it is not too unfavorable from the standpoint of exposure to cold and dampness. In following the patients from the medical wards of the Peter Bent Brigham Hospital to the Out-door Department, it was unusual to observe any cessation in their progress to recovery and any exacerbation was very exceptional.

In acute hemorrhagic nephritis a period of two to three months' rest in bed is a necessity and rest in bed is the factor of first importance in treating and safeguarding the future welfare of the patient.

3. Fluid intake. In acute nephritis and subacute and chronic nephritis with edema, the fluid intake should be kept at the lowest possible level which is compatible with the comfort of the patient. It is desirable to keep it down to an 800 to 1200 c.c. limit, varied to some extent according to the kidney output, nitrogen retention and the seasons. Usually during hot summer weather 200 c.c. more are required to keep the patient comfortable, than during the winter. Patients with chronic nephritis with a small amount of edema frequently can be kept on 1500 c.c. intake without water retention. From information obtained in dealing with nephritic patients, I am convinced that the mistake of forcing fluids in acute and subacute nephritis is frequently made. From the physiological point of view it is extremely doubtful if it is well to drink fluids too freely even with normal kidney function. The optimal intake is the amount that will insure a 1200 to 1500 c.c. output in the normal individual. Total kidney work can be tremendously increased by forcing fluids and fatigue of the kidney may be brought about in this manner. If you will recall, in the discussion of normal renal function[1] it was stated that about 62 liters of filtrate are required to pass through the glomerular system to produce 1 liter of urine. Therefore, to double the output to 2 liters would require 124 liters of filtrate, and to treble the output would require 186 liters. I have no scientific proof for this statement, and it is made on the

assumption that the first statement is true and that the same ratio obtains. If this is true, increasing the fluid intake beyond normal requirements throws a tremendous load on the working capacity of the kidney and it is apparent that it may be a source of potential harm to the individual. In chronic nephritis with nitrogen retention it may be desirable to increase the fluid intake to aid in the elimination of the retained nitrogenous end products. Hench[2] states this very well when he says that it is necessary to increase the fluid intake when the specific gravity becomes fixed at a level of 1.015 or below. The nitrogen level in the blood plasma is an additional indicator as to how much the fluid intake should be increased.

4. Since the ability to handle salt is the first function of the kidney to show impairment in nephritis, it is rational to restrict salt in the nephritic patient.[3] In acute nephritis and subacute nephritis with edema, the salt intake should always be kept at a low level. Some cases of nephritis with marked edema will have diuresis with discharge of the edema when put on a low fluid and salt-free diet, but others will not respond in this manner. If the edema does not disappear after about two weeks of salt-free diet, it is useless to continue rigid salt restriction. To continue for too long a period results in complete anorexia, nausea and vomiting. Before allowing the patient to proceed to this point, it is much better to change to a salt-poor diet containing two to three grams of NaCl per day. Nephritic patients without edema may be allowed more salt, or that amount ordinarily used in cooking; but they must not add salt to the food after it reaches the table. The salt-cellar and pepper-shaker should not be placed on the tray or table of the nephritic patient. If the patient is taught to use salt-poor butter and lemon juice, salt will not be greatly missed.

5. Dietary management and restriction of protein. Ten to fifteen years ago it was generally considered that sufficient restriction of protein was accomplished by placing the patient on a milk diet. Under this régime, allowing the usual two quarts of milk a day, the patient received about 80 grams of protein and altogether too much fluid. In acute nephritis it is much better to begin the treatment with concentrated fruit juice, apple sauce, jellies, cooked cereal, dry toast, zwieback, unsalted crackers and in a few days add other carbohydrates for variety. After a week or ten days a low protein régime with protein at 28 grams per day may be instituted. As to protein restriction in nephritis, the general rule may be followed to give no more protein than can be eliminated so that the blood urea nitrogen or non-protein nitrogen is kept at a normal level. A patient with acute nephritis with a definite renal insufficiency should not receive more than a low protein diet (28 grams per day). If under this régime the blood urea nitrogen falls or becomes normal, small increments of protein may be added from time to time. Meanwhile the blood urea nitrogen should be checked until 60 grams of protein per day is reached. This is the usual amount of protein allowed in the standard nephritic diet. The caloric value of the diet may be brought up to 1800 to 2500 calories by the use of carbohydrates and fats, depending upon the nutritional requirements of the patient. The amount of protein in the diet should be governed by the patient's protein metabolism and not by the albumin output in the urine.

In nephritis with marked albuminuria but without nitrogen retention, it seems irrational to restrict protein unduly and to allow the blood plasma to become further depleted of serum albumin and globulin. Why not supply this deficiency by giving a diet that contains sufficient protein for the metabolic needs of the individual patient, plus the amount that is lost in the urine? I cannot see any reasonable objection to it. In support of this view I wish to call attention to the recent investigations of Peters, Bulger and Murphy,[4] and I am taking the liberty of quoting in part their Summary and Conclusions:

"By the administration of large amounts of carbohydrates and fats it has proved possible to reduce protein catabolism to from .5 to .7 gm. per kilogram a day.

"If enough protein is given to cover the nitrogen catabolism plus an additional amount equivalent to that lost as albumin in the urine, nitrogen wastage may be prevented.

"Most of these patients when they enter the hospital show evidences of previous protein deficiency. If they are given more than enough protein to replace the amount lost in the urine, they will store the excess within certain limits, thus repairing the effects of previous nitrogen wastage.

"The protein wastage may be partly due to early dietary mismanagement. The loss of protein as al-

TABLE I

PROTEIN SELECTION DIET

Any combination of the foods listed below may be selected.
Foods not listed below must not be taken.
In Groups I and II there is a restriction in the total amount.
The foods in these groups must be served in full or half portions.
A full portion in Group I counts 1.
A full portion in Group II counts 2.
In Group III the quantity of each is not restricted, although you are urged to use discretion.
Points on recipes to count as indicated.
YOUR TOTAL SCORE FOR THE SHOULD BE ————.
YOUR TOTAL AMOUNT OF FLUID SHOULD BE ———— PINTS.
Do not add salt or spices to the food after it has been cooked.

GROUP I
(Each full portion counts 1)

	Full Portion
Bread (white)	1 av. slice
Bread (graham)	1 av. slice
Uneeda biscuit	5 crackers
Shredded Wheat	1 biscuit
Graham crackers	5 crackers
CEREALS, ETC.	
Oatmeal	2 tbsp.
Boiled rice	3 tbsp.
Cornmeal mush	4 tbsp.
Cream of Wheat	6 tbsp.
Farina	6 tbsp.
Macaroni	4½ tbsp.

Vegetables, etc.	*Full Portion*
Baked beans	1 tbsp.
Lima beans	1½ tbsp.
Potato, creamed	1 tbsp.
Potato, mashed	1½ tbsp.
Potato, baked	1½ med.
Potato, boiled	1½ med.
Canned corn	2½ tbsp.
Green peas	2 tbsp.
Beets	5 tbsp.
Spinach	4 tbsp.
Bananas	2 large
Cream, heavy	⅔ cup

GROUP II
(Each full portion counts 2)

	Full Portion
Milk	1 glass
Egg	1 egg
Eggs (scrambled)	1½ tbsp.
Flour, sifted	⅔ cup
MEATS	
Lamb chop, broiled	⅔ chop
Lamb, roast	3″x2½″x¼″
Beef, roast	3″x2 ″x¼″
Beef steak, broiled	2″x1 ″x1″
Chicken, roast	3″x3 ″x⅛″

Fish	*Full Portion*
Cod, boiled	1″x1″x1½″
Haddock, boiled	1″x1″x1½″
Halibut, boiled	1″x1″x1½″
Mackerel, boiled	1″x1″x1½″
Salmon, boiled	1″x1″x1½″
Smelt	½″x1″x3 ″
Oysters	7 oysters
Crabmeat, canned	2 tbsp.
Salmon, canned	1½ tbsp.
Shrimp, canned	6 small

GROUP III
(No restriction)

VEGETABLES		FRUIT		MISCELLANEOUS	
Asparagus	Mushrooms	Apple	Orange	Sugar	Cornstarch
Cabbage	String beans	Apricot	Peaches	Maple sugar	Arrowroot
Carrots	Tomato (fresh)	Blueberries	Pears	Syrup	Tapioca
Cauliflower	Tomato (cooked)	Cherries	Pineapple	Honey	Post-Toasties
Celery	Onions	Cranberries	Plums	Candy	Butter
Cucumbers	Squash	Grapefruit	Prunes	4 dates per day	Olive Oil
Lettuce	Turnips	Grapes	Raspberries	3 Sunshine arrowroot cookies per day	
		Muskmelon	Strawberries		
		Lemons	Watermelon		

bumin in the urine is certainly a serious contributory cause."

Outside the hospital and when the services of a dietitian are not available, the protein in the diet may be regulated by using the diet sheet here reproduced. This is copied from the one used in the Outdoor Renal Clinic of the Peter Bent Brigham Hospital and was made up by O'Hare and Vickers.[5]

In this diet one point is equivalent to 4 gm. of protein. If it is desirable to allow the patient 60 gm. of protein per day (standard nephritic

diet) a 15 point diet is ordered. If a low protein diet is desired (28 gm. per day) a 7 point diet is ordered. Any other protein allowance may be ordered in the same way. If the protein allowance is kept at a low figure the patient is advised to make up the bulk of the diet from Group III and select the protein from Group I. With a more liberal protein allowance he may select some of his protein from Group II so as to avoid monotony in the diet. By using Group III foods the total caloric value of the diet may be varied between 1800 and 2500 calories, depending on the nutritional requirements of the patient.

If the nephritis is benign or well along toward recovery, the quantitative protein restriction is not necessary. The necessary protein restriction is accomplished satisfactorily by a general restriction diet for nephritic patients such as follows:

GENERAL RESTRICTION DIET FOR HYPERTENSION AND NEPHRITIS PATIENTS

1. You should not eat soups made from meat stock, stews, cheese and nuts.
2. Do not add salt or spices to foods except that which is used in cooking.
3. Do not use ketchups, mustard, meat sauces, or other condiments except in very small quantities.
4. Meat, the size of a lamb chop or small pork chop, four times a week.
5. One or two eggs three times a week.
6. In your eating confine yourself as much as possible to vegetables, fruits, cereals, potatoes and bread.

Because of the tendency to chronicity in nephritis and the difficulty of knowing whether or not recovery in a given case is complete, it is well to advise the patient to continue the above restrictions with suitable modifications for a period of several years after apparent recovery, if not for the period of his lifetime. A diet régime such as the above will eliminate unnecessary work on the part of the kidneys. The dictum "once a diabetic always a diabetic" may in a measure be applied to the nephritic patient without being detrimental to his future welfare.

Before leaving the subject of the dietetic management of nephritis, I feel constrained to again offer the advice that in treating the kidney one should not lose sight of the patient. His nutritional and metabolic requirements should at all times require careful consideration and any régime that is instituted should be directed to maintaining optimal physical condition and nutrition. While our present state of knowledge concerning nephritis is still incomplete, there is much about it to suggest that nephritis is a general metabolic disorder in addition to its being a disease of the kidneys.

It is obviously impossible in one paper to enter into any detailed discussion of the treatment of the special manifestations occurring in the course of a nephritis that must be dealt with. However, a few of the special indications and emergencies that are frequently met will receive brief consideration. Outstanding among these are edema, uremia and cardiac failure.

Nothing will tax the physician's resourcefulness more than will the patient with a subacute nephritis with marked edema. Salt and water restriction in nephritis with edema has already been considered. The other measures that I have found to be the most helpful are the Karell diet (210 c.c. of skimmed milk every six hours and nothing else) continued for as long a period as the patient will permit, theocin 0.2 gm. every three to four hours for six to eight doses, calcium chlorid and ammonium chlorid with novasurol or merbaphen. In one case that came under my observation it was possible on repeated occasions to entirely rid the patient of his edema with nine to twelve gm. of calcium chlorid per day. A copious diuresis usually took place from the fifth to the tenth day and continued until the edema was gone. With calcium chlorid as with ammonium chlorid, the possibility of producing acidosis should not be overlooked, but the danger is minimal. Calcium chlorid has a rather objectionable taste, but this can be disguised by giving it in syrup of lemon or in ginger ale.

Ammonium chlorid may be given in the same dosage and when combined with novasurol and given according to the method of Keith, Barrier and Whelan,[6] shows perhaps the greatest promise. For the technic of administration the reader is referred to these authors. Marked renal insufficiency, if present, is a contra-indication to this method of treatment, as the originators themselves have wisely cautioned. The Epstein high protein diet (120 g. protein, low fat diet) also gives an occasional brilliant result. I have had no successful experience with it as

I have with the other methods advocated, but Dr. O'Hare told me of his success with it in at least three patients. Against these there were many more failures. Oftentimes, where one method of treatment fails in a certain individual, another is successful and it requires considerable experimentation to find the method or drug that will give the best results.

Uremia, when accompanied by convulsions and coma, is a complication that may demand immediate and rather drastic treatment. In severe uremia immediate venesection with withdrawal of 500 to 600 c.c. of blood is indicated. If the patient is anemic at the time of venesection (and this is usually true in chronic nephritis) immediate replacement of the blood withdrawn by transfusion from a suitable donor should be provided for. Otherwise the blood may be diluted with intravenous infusion of 500 to 600 c.c. of normal saline.

Elimination by free catharsis is next in importance and may be accomplished by the use of saline cathartics or elaterin. The former, if necessary, may be given with a stomach tube if the patient is unable to swallow.

Further elimination may be secured by use of two hot packs a day. If the pack does not produce satisfactory sweating, it may be reënforced by a hypodermic dose of pilocarpine.

For control of the nervous symptoms and convulsion, reliance must be placed on chloroform, morphine, or thirty grains of chloral by rectum, depending on the urgency of the symptoms.

It is likewise important to give sufficient fluid to compensate for the dehydration produced by the above measures.

In the milder forms of uremia, venesection is not necessary and all indications may be met by the employment of the other measures that are recommended.

A failing heart and circulation in the patient must be properly supported by rest, digitalis and other cardiovascular stimulants. Properly directed therapy may, in addition to aiding the heart, bring about marked improvement in the renal function.

In the treatment of the special complications and in the treatment of nephritis in general, common sense, experience and, most of all, a high degree of individualization are necessary.

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OVACOIDS AND TESTACOIDS

The advertising claims made for these preparations of Reed and Carnrick are typical of those made by this firm for products examined by the Council on Pharmacy and Chemistry and denied admission to New and Non-official Remedies in 1907. Ovacoids and Testacoids are stated to be "the hormones or autocoids of the sex glands in high concentration, and *active by mouth!*" Ovacoids is stated to "represent the hormones of the entire ovary in highly concentrated form, associated with the hormones of the anterior pituitary and with phosphorus in organic combination." Testacoids are claimed to contain "in addition to the testicular hormones, . . . the hormones of the prostate gland and organic phosphorus." The use of these preparations is irrational and dangerous because the character of the ingredients and their amounts is not declared. The administration of organic phosphorus is not only irrational but superfluous. Though indefinite and semi-secret, the composition of Ovacoids and Testacoids is sufficiently specific to place the preparations in the class of pluriglandular mixtures, to the menace of which the Council on Pharmacy and Chemistry has repeatedly called attention. The most important ingredient of Testacoids is apparently a testicular extract. Such preparations are not accepted for New and Non-official Remedies and their therapeutic value has not been demonstrated. There is nothing in the claimed composition of Testacoids to furnish a basis for the extensive claims made for the preparation. (Jour. A. M. A., Feb. 5, 1927, p. 422.)

MULTIPLE PERFORATED GASTRIC ULCERS, CASE REPORT AND REVIEW OF THE LITERATURE*

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The occurrence of a single perforation as a result of gastric ulcer is not uncommon, but the association of two or more such perforations with the same or different ulcers is unusual. In a review of the literature we have been able to find records of only thirty-two authentic cases; we are reporting one case from the Mayo Clinic (Tabulation).

REPORT OF A CASE

A boy, aged eighteen, had been perfectly well until three weeks prior to his admission to the clinic. At that time he had noticed lassitude and weakness, later accompanied by anorexia and a loss of 30 pounds in weight. For about one week he had had almost constant epigastric burning and distress which appeared about two hours after meals and was sometimes relieved by taking food. He had been working every day, however, until noon of the day before his admission, when moderately acute pain appeared in the epigastrium, especially on the left side, and he vomited twice during the afternoon and evening. The pain became localized in the lower right quadrant and was aggravated by movements of the right leg.

On examination the patient appeared undernourished, and his face was flushed. The pulse rate was 90 and the temperature was 100.8° F. There was moderate enlargement of the thyroid gland. The abdomen was moderately distended and there were generalized tenderness and muscle spasm over it, especially marked in the lower right quadrant and upper left quadrant. The urine was normal except for an occasional pus cell; the leukocytes numbered 19,900.

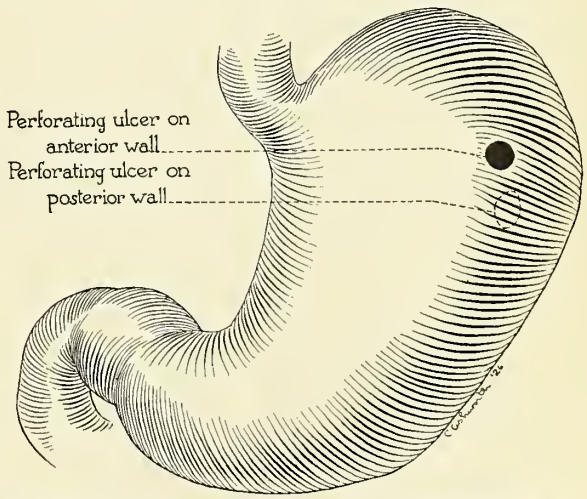
A diagnosis was made of an acute abdominal lesion and exploration was done through a right rectus incision. The abdomen was filled with gastric secretion and food remnants; there was moderate generalized peritoneal irritation, and a perforated ulcer was found on the anterior wall of the stomach well to the left of the median line. The lesser peritoneal cavity was also filled with gastric contents and further examination revealed another ulcer about 1 cm. in diameter, perforated into the lesser peritoneal cavity, almost exactly opposite the one on the anterior wall (Illustration). The appendix was moderately inflamed but was not removed as the inflammation was probably secondary to the generalized peritoneal irritation. As much of the gastric contents as possible was removed by the use of the sucker, and the perforations in the stomach were closed with double rows of chromic catgut sutures. A Paul-Mixter tube was carried into the pelvis through a separate stab wound and the incision was closed around two Penrose drains. The patient had an uneventful convalescence and was dismissed from the hospital on the seventeenth day. At the expiration of a month he had had no gastric symptoms and showed a marked gain in weight and strength.

*From the Division of Surgery, Mayo Clinic, Rochester, Minnesota. Submitted for publication November 30, 1926.

REVIEW OF THE LITERATURE

Brentano, in a series of seventy-five cases of perforated gastric ulcers, reported five multiple perforations, four with double lesions and one in which there were four perforations of the lesser curvature of the stomach. Scully mentioned two cases in which there were double lesions and Körte reported two such cases in detail. There are other scattered reports of cases.

The surgical repair of a perforated gastric ulcer was first reported by Mikulicz, in 1880, and



Diagrammatic representation of the two perforations in the stomach.

the first instance in which a double perforation was treated surgically was reported by him also nine years later. At operation he sutured one perforation on the anterior wall, but the patient died and at necropsy the second perforation was discovered on the posterior wall.

In reviewing the literature only those cases were considered in which there were two or more definite perforations of the gastric wall, each of which permitted the free escape of gastric contents. Cases in which a perforated gastric ulcer was associated with a perforated duodenal ulcer, or with a chronic perforating gastric or duodenal ulcer, or those in which a secondary perforation occurred shortly after the

closure of the primary perforation, have not been included.

In the twenty-five cases in which the sex was mentioned six (24 per cent) were males and nineteen (76 per cent) were females. This ratio is similar to that in a series of cases of single perforated gastric ulcers reported by Caird and his associates, in which 31 per cent occurred in males and 69 per cent in females. Multiple nonperforated ulcers, on the other hand, occur more frequently in males: according to Judd and Proctor, 70 per cent occur in males and 30 per cent in females.

The age at which the multiple perforations occurred is a little lower than that of the single perforations, 72 per cent of the former occurring under the age of thirty while only 53 per cent of the latter, according to Caird and his associates, were in individuals below that age. The youngest patient was sixteen and the oldest eighty.

In only two instances have there been more than two perforations. In Vianny's case there were three perforations close together near the plyorus and in one of Brentano's cases (Case 20) there were four perforations close together on the lesser curvature. In both of these cases it is probable that the multiple perforations were from single large ulcers.

In twenty-three cases the site of the perforations was recorded and in twelve of these they were symmetrically placed, one on each wall, exactly opposite each other. In two other cases they occurred one on each wall but not exactly opposed. In four cases both perforations were on the anterior wall, and in two both were on the posterior wall. The majority of the perforations were near the cardia or on the lesser curvature.

The symptoms resulting from multiple perforations do not differ from those of a single perforation; unfortunately it is only rarely at operation and usually at necropsy that the diagnosis of multiple lesions has been made.

The treatment is always surgical and does not differ from that of the single perforation but it is essential to find the second lesion. In eighteen of the cases reported there was abdominal exploration but in only four were both perforations found and closed. The patients recovered. In three of the four cases both perforations were situated on the anterior wall, and in only one, the Mayo Clinic case, were the perforations on opposite walls of the stomach.

There are two reasons for the high mortality rate among this group of cases: (1) many of them belong to a period when the necessity for prompt surgical intervention was not fully appreciated, and (2) at operation usually only one of the perforations is found and closed and the other is overlooked.

DISCUSSION

Multiple perforations in gastric ulcers may be classified in three groups: (1) those in which there are multiple perforations in a single ulcer; (2) those in which two or more ulcers, not related to each other, become perforated, and (3) those in which two perforations occur exactly opposite each other, perforations of the so-called kissing type. This is the most common type. The symmetry of the perforations in this group is often so exact that it simulates the lesions that would be produced by a bullet passing through the stomach. Indeed, in several instances it was suggested that the patient might have been shot.

Inasmuch as gastric ulcers are multiple in 6 per cent of cases (Judd and Proctor) it can readily be seen that the occurrence of two simultaneous perforations may be only a coincidence and this is more likely to be the case when the perforations are neither directly opposed nor occur side by side in the same ulcer. It is not surprising that two perforations should occur in one ulcer, especially when that ulcer is large and the perforating process encounters varying degrees of resistance in different portions of its base. The most common relationship, however, is for opposing ulcers to perforate, and this too may be only a coincidence because gastric ulcers have a tendency to this situation. If gastric ulcers are infectious in origin and the perforation is due to the activity of the infecting agent, then it does not seem unreasonable to suppose that the point of contact opposite the first ulcer, by reason of its proximity, would be more exposed to the influence of this agent than any other portion of the stomach. The fact that in many cases the observation has been made that one of the ulcers is apparently much older than the other would seem to indicate that some such influence was at work and that all of the instances in which

Case	Author, Year	Age, Sex	Symptoms	Description	Treatment	Remarks
1	Bell		No data	Two perforations near the cardia	No data	No data
2	Bourlot 1900	42 F	Pain in epigastrium for several months. Acute pain since the day previous to examination	Two perforations: anterior wall and on posterior wall; symmetrically placed	Exploration late Ulcer not found	Died
3	Bott 1876	36 F	Intermittent dyspepsia for three years. Then suddenly severe pain over the entire abdomen	Two perforations on lesser curvature near cardia exactly opposed to each other	No exploration	Died: gastric contents free in abdomen. Adhesions to posterior wall of stomach.
4	Brentano 1906 (Case 1)	22 F	History of ulcer for two years. Then suddenly acute pain	Two perforations; anterior wall of greater curvature, and on posterior wall, near lesser curvature	No exploration	Died eight and one-half days after perforation
5	Brentano (Case 5)	23 F	Symptoms for six or eight weeks. Then suddenly acute abdominal pain	Two perforations; anterior wall near lesser curvature, and another large ulcer near by with small perforation	No exploration	Died
6	Brentano (Case 12)	80 F	No data	Two perforations 5 cm. apart on anterior wall, near pylorus and lesser curvature	No exploration	Died
7	Brentano (Case 20)	75 M	Gastric symptoms for three months. Patient brought to hospital moribund	Four perforations of various sizes on the upper wall.	No exploration	Died: a fifth ulcer found near the pylorus
8	Brentano (Case 48)	29 M	Symptoms of ulcer for twelve years. Then suddenly acute pain in abdomen	Two perforations; anterior wall of upper border, and on posterior wall	Explored two days after perforation. Anterior perforation closed	Died: second perforation found at necropsy
9	Brooks 1890-1891	32 F	Dyspepsia for some time. Then suddenly acute pain	Two perforations; anterior wall, middle and 1.5 cm. below lesser curvature, and on posterior wall opposite, larger and nearer pylorus	Exploration	Died
10	Currie, 1896		No data	Two perforations near cardia	No data	
11	Demons 1897	16 F	Abdominal pain and vomiting for several months. Then suddenly acute pain.	Two perforations; posterior wall, round and free from induration, and on anterior wall opposite. Both near cardia	Exploration twenty-one hours after perforation. Anterior perforation closed	Died: second perforation found at necropsy. Possibility of trauma was suggested

REVIEW OF THIRTY-TWO CASES OF MULTIPLE GASTRIC ULCERS REPORTED IN THE LITERATURE AND ONE FROM THE MAYO CLINIC—*Continued*

Case	Author, Year	Age, Sex	Symptoms	Description	Treatment	Remarks
12	Diriart and Apert 1896	F	No symptoms until perforation. Then sudden onset of acute pain two hours after a heavy meal	Two perforations; anterior wall, and posterior wall. Exactly opposite and same size	Exploration, ulcers not found	Died: appearance of the perforations suggested a bullet wound
13	Freneh 1907 (Case 8)	35 M	Known to have had ulcer for many years; many hemorrhages	Two perforations; anterior wall, small hole in a large ulcer near pylorus, and on anterior wall, acute ulcer near cardia	Exploration twenty-four hours after perforation. Both found and sutured	Recovered. In good health eighteen months after operation.
14	Jayle 1891	20 F	Violent pain in left hypoehondrium and vomiting	Two perforations; anterior wall, small perforation near middle and 3 em. below lesser curvature, and on posterior wall opposite	No exploration	Died: perforation diagnosed but condition too poor to justify exploration
15	Keays 1903	16 F	Indigestion for one year. Two previous attacks of severe pain and present attack	Two perforations; large ulcer near cardia and lesser curvature, and on posterior wall opposite, smaller with some adhesions	None	Died twenty-four hours after perforation and before being seen by physician. Scar of a third ulcer on the posterior wall
16	Koerber 1906		No data	Multiple perforations near middle of posterior wall	Exploration but perforations not found	Died: perforations found at necropsy
17	Körte 1906 (Case 7)	17 F	No symptoms previously until sudden onset of severe pain in abdomen	Two perforations; anterior wall near lesser curvature, and on anterior wall near by	Exploration ten hours after perforation. One perforation closed	Died three days after operation. Ulcer on anterior wall showed induration
18	Körte (Case 8)	21 M	History of ulcer for one year. Then suddenly severe pain and collapse	Two perforations 1 cm. apart, midway between cardia and pylorus, near lesser curvature	Exploration seven hours after. Both perforations closed and gastroenterostomy	Recovered
19	Lyell 1898	19 F	Symptoms of ulcer for two weeks. Hematemesis five days previously	Two perforations; anterior wall 0.6 cm. in diameter, and on posterior wall opposite and near pylorus; larger and without adhesions	No exploration	Died
20	Mauclaire and Eschbach 1904	29 F	Abdominal distress for two years. Acute pain in left side of abdomen. Vomited six hours before admission	Two perforations; anterior wall and on posterior wall, both near cardia and opposite each other	Exploration nineteen hours after perforation, attempted closure of anterior perforation	Died three days after operation. Second perforation found at neeropsy
21	Mikulicz 1889	17 F	Symptoms of ulcer for six months. Then suddenly acute pain	Two perforations; anterior wall, middle, near the pylorus, and on posterior wall	Exploration thirty-six hours after perforation. One perforation found	Died: second ulcer found at neeropsy

REVIEW OF THIRTY-TWO CASES OF MULTIPLE GASTRIC ULCERS REPORTED IN THE LITERATURE AND ONE FROM THE MAYO CLINIC—*Concluded*

Case	Author, Year	Age, Sex	Symptoms	Description	Treatment	Remarks
22	Mitchell 1900	25 M	History of dyspepsia, then violent pain with vomiting	Two perforations; anterior wall near pylorus, 0.4 cm. in diameter, and near the cardia	Exploration, perforation on anterior wall sutured	Died: second perforation found at necropsy
23	Page 1898	22 F	No symptoms until sudden onset of acute pain and vomiting	Two perforations; anterior wall close together; one 2 cm. in diameter, the other 1 mm.	Exploration, both perforations found and closed	Recovered
24	Parker		No data	Two perforations close together near cardia		
25	Rabagliati 1895		No data	Two perforations; anterior wall and on posterior wall	Exploration, perforation on posterior wall closed	Died: second perforation found at necropsy
26	Richardson 1900	27 F	Gastric symptoms with vomiting for six weeks. Tenderness for one week, then suddenly severe pain	Two perforations; anterior wall at juncture of middle and upper third of each axis, and on posterior wall opposite; perforated through center	Tube stitched into perforation through anterior wall	Died: second perforation found at necropsy
27	Scully, 1918		No data	Two perforations		
28	Scully		No data	Two perforations		
29	Steele 1895	21 F	History of ulcer for six months. Then suddenly severe pain and shock	Two perforations; anterior wall left of median line, between greater and lesser curvatures, and on posterior wall opposite	Exploration and suture of perforation on anterior wall nineteen hours later	Died three and one-half hours after operation. Second perforation found at necropsy
30	Stelzner 1889 (Case 2)	Young F	Symptoms of ulcer followed by acute pain	Two perforations	Exploration forty-eight hours later. One perforation sutured	Died four days after operation. Second perforation found at necropsy
31	Vergely 1881	43 F	Old gastric complaint, then suddenly acute pain in the epigastrium with distention and tenderness	Two perforations; anterior wall 5 cm. from pylorus, and on the posterior wall near the cardia	No exploration	Died: ulcers larger than the perforations. Ulcer on posterior wall the older
32	Vianny 1900		No data	Three perforations adjacent to each other, near the pylorus		
33	Mayo Clinic 1926	18 M	Mild symptoms for three weeks. Then moderately severe pain thirty-two hours prior to admission	Two perforations; anterior wall near cardia and on posterior wall almost exactly opposite	Exploration and both perforations found and closed	Recovered. Symptoms relatively mild. Well one and one-half months after operation

multiple lesions were present are not mere coincidences.

This case is of special interest because (1) the patient was younger than most patients with gastric ulcer; (2) the ulcers were situated in the fundus of the stomach, close to the greater curvature; (3) the patient did not have the typical symptoms of a perforated viscus and from his history it is impossible to state when perforation occurred, but it must have been several hours before operation, and (4) it is the only case in the literature in which the ulcers were symmetrically located and the patient recovered. In the three other cases of multiple perforated ulcers in which the patient recovered, the ulcers were on the anterior wall and in two of them the perforations were probably from a single ulcer.

CONCLUSION

Although the occurrence of multiple perforations in the stomach is not common, the possibility of such a multiplicity of lesions must always be borne in mind when one is dealing with perforated ulcers, and both walls of the stomach should be thoroughly examined at the time of the operation.

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THE HOSPITAL LIBRARY SERVICE*

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St. Paul is fifteen years older than Minneapolis and, having been born first, has grown up first; and one evidence of its adult years is its prior adoption of the hospital library service. Its influence in this promotion has gone far and wide. Its example has been followed by its Sister City and it has extended to the University of Minnesota, where, through the agency of a small group of people interested in St. Paul's experience, a five-year course for the hospital librarian has been outlined. And the influence of this movement has extended to the American Hospital Association which has officially approved this course. New as the hospital library service is, its establishment in so large a number of St. Paul hospitals proves its recognized value and guarantees its permanence.

This work is the function of a specially trained librarian; for, self-trained or school-trained, the need of a special training is quite clear. She must have not only a knowledge of books, but a knowledge of human beings, and of human beings who are sick and suffering, or recovering from the consequences of illness. It is not only a knowledge of library administration, but of hospital organization she needs. Difficult as the task is, she has to serve two masters—the library and the hospital.

True, there are some other people concerned in the promotion of this work who need some training, too, but I shall talk about them presently.

The hospital librarian has a special leverage of influence, of which she should take advantage, in the fact that not only the patients, but the administrative force, the interne staff, and the nurses may be included among her beneficiaries. She has a particularly good work to do in relieving the tedium of hospital routine, in easing the burden of hospital duty for the hospital worker by the recreation of reading.

Reading is a form of occupational therapy, although it works with its own peculiar technic. The hospital librarian occupies the minds rather than the muscles of her patients. She nurses their minds, in fact, and in doing it she proves herself an intelligent sister of the nurse. Said a woman, convalescent enough to be propped up in bed and to read for a couple of hours, as she finally laid down her book—"Well, I had forgotten I was ill." One cannot forget that one is ill without being better as a result. And her nurse, as well as she, was benefited, rested, by that lapse of memory of pain and incapacity. These two nursing sisters had held up each other's hands.

The hospital librarian is necessarily, in the service of her clientele, a book-loving, book-reading, book-dispensing missionary. Whether they know it or not, they are lifted by her influence. Every one of them who has not been a reader and becomes, through her ministration, a lover of reading, is a convert to a new faith and carries its gospel far. Reading is as contagious as it is a remedial practice. Said an old washerwoman, whose husband had returned from a long hospital residence: "I don't know what all they did to him down there—he just reads the evenings through and it's difficult to get him to bed." "And," came the query, "he's the better for it, isn't he?" "Well," she said, "he's more livable to live with!" There's no better achievement than to be "pleasant to live with."

The administrative and the clinical staff of the hospital may be, should be, the allies of the librarian. She is doing institutional service. They should enlarge her place in the institution. She is serving their patients—they should help her to understand them. They, in their turn, should learn the uses of reading to the sick. They should sit at her feet and find out the values, the ministry, the therapy of books. And they have a therapy of their own. If there is—and we know there is—know it nowadays as we never have before—a relationship of influence between mind and body, between the flesh and the spirit, it is a relationship of influence that works both ways. For this cause, the hospital librarian must be something of a diagnostician, if not of disease, at least of the physical and mental condition of the patient. She has to prescribe—to prescribe books. And there are books that are stimulants, that are tonics; books that are sedatives, that are hypnotics; books that are mental nutrients, that are mental purgatives; books that are recreative, educative, and a number of other things

*An informal talk to hospital and library workers at the St. Paul Public Library, November 27, 1926.

besides. And let us not forget that there are books that are depressants, books that are poisonous. Even the covers of books are educative; we may absorb values from them as well as from their pages. Anyone who has handled large numbers of books thoughtfully knows this. He has gained something from the very atmosphere of books.

We have noted that the hospital librarian has to establish relations with the hospital administration, the hospital staff, the interne force, the nursing service, the social service, as well as with the patients. She has to work with and through all of these. She works for them, but she must work with them. It will not take them long to learn, if they are open to suggestion, the benefits she confers upon them all, from the patients in the wards to the superintendent in the office. She is not alone in her obligations to them. They have obligations to her. She is doing them service; she has a right to look for a return. She is a civilizing, an educative, a remedial agent among them. Let them expand to and enlarge her influence.

Like every new work, her job is a difficult one. It is not, as yet, well oriented. It has had to make its own place. It has had to overcome prejudice, criticism, skepticism, inertia, that stultifying, paralyzing fetter which leads us to abhor change, to love to limit our feet to the well-trodden ways of men.

It is time that our appreciation of the hospital librarian and her work be made practical. She needs coöperation, encouragement.

How can you hospitalizers give it to her? What is your part to play in her game—a game hard to play and difficult to win.

Well, first of all, give her suitable housing for her books—the tools of her work—a roomy set of well-built shelving, with glass doors and a reliable lock to them. Make it big enough to grow into.

Give her a good-sized, well-finished table upon which she may sort over her selected books for bedside distribution; upon which, too, she may lay out a generous assortment of current periodicals, which you should supply—and at very small annual cost.

Give her, not a dark, musty corner in the basement, not a mere cupboard in some out of the way place, but a warm, sunny room, of adequate size, to serve as a reading room, in which you may put the book-shelves and the table and a few chairs, some of them comfortable, lounging chairs, in which ambulant patients may sit. Nurses will be glad to lead them there to rest, to read awhile, to look at pictures—to the childhood lore of which sickness often makes one easily revert.

Get your woman's auxiliary—every hospital should have one—to provide some bright chintz curtains, a table scarf or two, a couple of green-shaded reading lamps, to give the place a homelike atmosphere and a touch of grace. Encourage the hospital family to come there, at the librarian's hour, to look over her books and select their own reading.

Then, another thing, hospital administrators, put a small item in your annual budget, year by year, to replace the books that are dirty and worn with your institutional use of them—the books that your patients and your staff lose or forget to return. You are served by a public library, you say? Yes, and some gratitude is due for that service. It provides you with a hospital librarian, and some messenger or delivery labor and with some books. But public money is always meager money. There is not enough to go around. It does not go far in buying new books. You all know that. And books, almost unbelievably, wear out.

Encourage its service to you; keep an encouraged heart in your librarian. Make her work worth while. Twenty-five, fifty or a hundred dollars a year, according to the size of the hospital, will help to give you the use of more books and of better books all around.

And doing all this, you will encourage in the minds of your readers a respect for books. Ruskin once said there were three things most deserving of respect—a child, a tree, and a book. And respect for books cultivates a love of books. It is quite easily cultivated. Readers always read above themselves. I think Herbert Spencer was responsible for that saying. It's true, although its truth almost frightens one, because if the books some of us read are above us, some of us are pretty low down. Nevertheless, growth in the appreciation of books—and we may observe that growth in the individual, the family, or the community—assures one of the contagion of the process—tells us once more that "good the more encouraged the more abundant grows."

MINNESOTA MEDICINE

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EDITORIAL

The Basic Science Law

On April fifth the Senate passed the Basic Science bill providing for the establishment of a State Board of Examiners in the Basic Sciences. Three days later the bill was also passed by the House of Representatives, and the Governor's signature affixed April twelfth made the bill a law to become effective May first. The bill as finally passed provides for a Board of Examiners in the Basic Sciences of five members, two to be full time paid professors (or associate or assistant professors) not actively engaged in the practice of healing, who shall be appointed from the University of Minnesota or any university or college in Minnesota accredited by the University of Minnesota, one physician and surgeon, one osteopath and one chiropractor. As a result the fundamental requirements of all who begin practice of the healing art in Minnesota in the future are raised.

The new law provides in brief that all persons not now qualified by the three existing Boards, Medical, Osteopathic and Chiropractic, must pass examinations in the Basic Sciences (anatomy, physiology, pathology, bacteriology, hygiene and, after 1931, chemistry) or take down their shingles.

Licensed physicians, osteopaths and chiropractors must register with the new Basic Science Board before October first and pay the fee of $3.00. They will receive a certificate showing it was issued for the purpose of registration, which within thirty days following issuance must be recorded with the clerk of the District Court in their respective counties.

In the future every physician, osteopath and chiropractor must register yearly with his respective State Board, paying a fee in 1928 and 1929 of $5.00 and thereafter $2.00 per annum. The income from such fees is to be used to defray Board expenses and to further law enforcement. Inspectors may be employed to search out offenders. The various Boards will undoubtedly exert their prerogatives and the money will be well spent. The new law specifically provides that the burden of proof lies with anyone accused of practicing without a Basic Science Board license.

Provision is wisely made that reciprocity with other State Medical Boards is not affected and certificates from the National Board of Medical Examiners will continue to be accepted in Minnesota.

Physicians in the employ of the Army and Navy and the United States Public Health Service are specifically exempt from the new law. A long list of additional exemptions includes dentists, nurses, midwives, etc., providing they limit themselves to their proper scope of activities.

Simultaneously the Minnesota Medical Practice Act which had fallen into a state of innocuous desuetude was amended. The main alterations consisted in the reduction of the number of members in the State Board of Medical Examiners from nine to seven. As a vacancy occurs the Council of the State Medical Association will recommend to the Governor three physicians from whom he may select one.

In the act as amended the terms "immoral, dishonorable or unprofessional conduct" for which the Board may refuse to grant or revoke a license are thus amplified:

"The words 'immoral, dishonorable or unprofessional conduct,' as used in this section shall mean: (a) Procuring, aiding or abetting a criminal abortion; (b) advertising in any manner either in his own name or under the name of another person or concern, actual or pretended, in any newspaper, pamphlet, circular or other written or printed paper or document, professional superiority to a greater skill than that possessed by fellow physicians and surgeons, or the positive cure of any disease, or the curing of venereal diseases, the restoration of 'lost manhood,' the treatment of private diseases peculiar to men or women, or the advertising or holding himself out to the public in any manner as a specialist in diseases of the sexual organs, or diseases caused by sexual weakness, self abuse, or excessive indulgences, or the advertising of any medicine or any means whatever whereby the monthly periods of women can be regulated or the menses re-established, or being employed by or in the service of any person, concern, actual or pretended, so advertising, or in any manner creating a fear of private diseases; (c) the obtaining of any fee, or offering to accept a fee on the assurance or promise that a manifestly incurable disease can be or will be cured; (d) willfully betraying a professional secret; (e) habitual indulgence in the use of drugs; (f) conviction for willfully violating any narcotic law; (g) conviction of offense involving moral turpitude; (h) conviction of a felony."

The Basic Science law passed in Minnesota is undoubtedly one of the most important laws ever passed in the interest of public welfare and the best that could be obtained with such a strong element in the legislature and among the public favoring quackery in medical practice. It is felt that a division of responsibility in determining qualifications for practicing the healing art will work out more harmoniously than if the Board were constituted as originally planned. If provisions of the new law are ineffectual it must be remembered that it is easier to modify an existing law than to institute new legislation.

The profession throughout the state has shown itself greatly pleased at the outcome. The success was due to concerted action by many physicians throughout the state. The legislative committee of the Association and especially its chairman deserve the gratitude of the members for their unselfish hard work with a legislature which fortunately contained a sufficient number of members who appreciated the importance of educational qualifications in the interest of the public.

Acidosis and Alkalosis

The term acidosis was first employed in connection with acetone formation such as occurs in diabetes and starvation. Before the discovery of the acetone bodies, Walters (1877) found that when an acid of any kind was injected into animals it led to the excretion of an abnormally large proportion of urinary nitrogen in the form of ammonia. This discovery, together with the fact discovered by Hallervorden in 1890, that the diabetic excreted a disproportionate amount of ammonia, led to the suggestion that some organic acid must be formed in large amounts in diabetes, a suggestion that prompted the search for and led to the discovery by Stadelmann and Minkowski of beta-hydroxybutyric and butyric acid in diabetic urine (1884). The term "acidosis" as first employed seems to have implied nothing more than increased excretion of ammonia, the result of the formation of abnormal organic acids.

In 1917 Van Slyke and Cullen developed a simple method of measuring the carbon dioxide and bicarbonates of the blood plasma. The accumulation of non-volatile acids, such as lactic acid or acetoacetic acid, may be compensated to a limited extent by the buffers of the plasma, especially bicarbonate, and by the excretion through the lungs of volatile carbonic acid. L. J. Hasselbach, Yendall Henderson and Van Slyke showed that a definite relation normally exists between the amount of sodium bicarbonate, the amount of carbonic acid and the PH (a reciprocal index of hydrogen ion concentration or reaction) of the blood. Anything that will raise the sodium bicarbonate or lower the carbonic acid will tend to raise the value of the PH (increased alkalinity) and anything that will lower the sodium bicarbonate or raise the carbonic acid will lower the PH (increased acidity). The term acidosis came to be applied to conditions in which

the bicarbonate content of the blood plasma was decreased even when the reaction of the blood, or PH, was maintained at normal by the buffering systems of the blood (compensated acidosis), as well as to conditions in which the actual reaction of the blood was shifted to the acid side because of the inadequacy of the buffers (uncompensated acidosis (PH decreased)). The terms compensated alkalosis and uncompensated alkalosis were introduced to express the converse conceps. The PH values found in the venous blood plasma of normal resting adults falls between 7.35 and 7.43; values below 7.32 (acidity) and above 7.47 (alkalinity) are considered abnormal (Myers and Booher).

Clinical conditions that lead to acidosis are (1) accumulation of carbonic acid by asphyxia; (2) formation of lactic acid, by muscular exertion; (3) administration of acid and acid salts; (4) formation of acetone bodies, in diabetes, in low carbohydrate dieting or in starvation; and (5) formation of other organic acids in nephritis, in diabetes, in certain toxemias. The acidosis may be compensated by the buffering systems of the blood, in which case the actual reaction of the blood is unchanged; or it may be uncompensated, in which case PH determinations will be low (increased acidity). The extreme degrees of uncompensated acidosis are most common in diabetes. This is apparent from Magnus-Levy's estimation of the amount of oxybutyric acid that may accumulate (200 to 300 gm.) as well as from the estimate of total acid made by Bock and his associates in four cases of diabetic coma (71 to 103 gm.) expressed as acetic acid. Both Higgins and Adair observed PH values as low as 7.93 in one of these cases. That organic acids other than the acetone bodies are responsible for lowering the PH in some cases of diabetic coma appears from their study as well as from reports of Starr and Fitz. Insulin administered in such cases may clear the body fluids of acetone without completely restoring the neutrality of the blood; alkali (sodium bicarbonate) must be given to effect this.

Conditions that may lead to alkalosis are: (1) overventilation of the lungs, with consequent decrease in the carbonic acid of the blood; (2) fever; (3) injection of alkaline salts (sodium bicarbonate); (4) intestinal obstruction; (5) deep x-ray treatments.

Hypernea, overventilation, is usually encountered in conditions of acidosis (for instance, Kussmaul's "Grosse Atmung" seen in diabetic coma) and is a compensatory mechanism ridding the body of carbonic acid and thus leaving bases behind to combine with non-volatile organic acids. Serious symptoms of alkalosis may be provoked, however, by voluntary overbreathing.

Koehler has reported PH and carbon dioxide determinations in cases of fever, the PH reaching 7.60 in one of his cases. He attributes this to overventilation.

Administration of alkaline salts, as practiced in the treatment of peptic ulcer and other diseases, has occasionally led to toxic symptoms associated with renal damage.

McCann in 1918 showed experimentally that pyloric obstruction resulted in alkalosis (and tetany). This, as well as the depression of the blood chlorides which accompanies it, was attributed at first to loss of hydrochloric acid by vomiting, but Haden and Orr, 1923, found a fall in chlorides and alkalosis in animals in which vomiting had been prevented by obstruction of the cardia, and McVicar reports that toxemia has appeared clinically with very little vomiting, and that conversely, prolonged and frequent vomiting is not always accompanied by a fall in chlorides.

Hussey observed uncompensated alkalosis in rabbits following deep x-ray therapy and Myers and Dooher report a similar observation in a patient.

Kast, Myers and Schmidts have reported twenty cases of uncompensated alkalosis with determinations of the plasma carbon dioxide and the PH. The direct cause of alkalosis in ten of these was sodium bicarbonate administration; four were cases of peptic ulcer being treated by Sippy's method; one was a case of diabetes; two were cases of nephritis; in two cases alkali was administered after cholecystectomy, and in one after oöphorectomy. In the other cases vomiting and x-ray treatment and fever were considered responsible. There is evidence that certain patients are predisposed to alkalosis because their kidneys do not eliminate alkali readily. In the case of diabetes the blood sugar was 0.288 per cent and the urine contained acetone, yet the PH, after alkali treatment, reached the remarkably high value 7.60. This patient died, presumably from alkalosis, although in diabetic "acidosis." Cyclic vomiting is usually associated with the production of acetone bodies (starvation) but

loss of hydrochloric acid may result in alkalosis; and here again a condition of alkalosis may be found accompanied by acetone formation, unless the kidneys are able to compensate by eliminating the necessary amount of base.

Alkalosis is frequently not recognized. It may be overlooked entirely or mistaken for acidosis with the unfortunate result that alkalies are used for treatment. The chief symptoms are headache, lassitude, nausea, vomiting, fever, and in severe cases tetany, but the suspicion of alkalosis should be entertained with all patients receiving alkalies or with abdominal conditions that suggest intestinal obstruction. An early study of the chemistry of the blood (high carbon dioxide combining-power, low chlorides, high urea) is indispensable for correct diagnosis. The treatment recommended by McVicar consisting of the intravenous injection of hypertonic solutions of sodium chloride and glucose seems to be of great benefit. R. M. W.

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Improving Hospital Service

"The statistics published this week give some idea of the tremendous place now occupied by hospitals in medical education and medical practice" (Editorial in A. M. A., March 12, 1927). Minnesota has had a most notable share in this development; but it is doubtful whether the medical staff of many of our hospitals fully recognize either its responsibilities or amazing opportunities. Hospitals can be judged in this regard quickly and fairly accurately by reviewing the staff's handiwork in record keeping, the kind and quality of staff meetings, and the autopsy percentages on hospital deaths. It must be granted of course that a total failure to comply with any and all of these standardizing requirements does not necessarily deprive many individual patients of the very best of care. It is indeed this *successful individualism* which stands most in the way of effective group study: of bringing into the hospital one of the most effective agencies existing today for the absolutely essential continuous study course for which each doctor must set aside time.

The writer has visited about fifteen well known hospitals in the Middle West in the past month. Hospital charts were called for and reviewed. Record room attendants very noticeably presented to the visitor their best ones, before a request for the worst was made. It may help the American College of Surgeons to be reminded that the surgeons' blanks are apt to show the greatest lapses and the most astounding abridgments. Experiences show that when inferior records are discussed with their makers, it transpires that the doctor has a vast array of substantial and circumstantial evidence in his head; but in that location it is far from permanent even for him and is useless for any reviewer. The present demand that hospitals must show autopsies in at least 10 per cent of deaths before they can be accredited for internes, is an acknowledgment that hospitals given high ratings need yearly checking. What is to be said of hospitals of 250 to 300 beds that have been getting only six to ten autopsies a year? It is not true that private patients refuse autopsy permission. The results at the Mayo Clinic alone disprove such a contention.

Few hospitals too are living up to such valuable features of chart making as "final summaries" and record committee revisions. The situation for teaching in our hospitals is far from bad. Indeed the staff is all set. A splendid foundation is already built. Nursing education and chart building is uniformly superb. It remains largely for medical staff members to lead the way. They have not far to go but the step is a difficult one—it requires a little immediate sacrifice of "splendid isolation" to attain that enormous advantage that accrues "where everybody's cards are on the table" and the goal is "the whole truth, and nothing but the truth, so help me God." E. L. T.

The 1928 A. M. A. Convention

The American Medical Association is to be invited to hold its annual convention in Minneapolis in 1928. The excellent manner in which Minneapolis entertained the Association in 1913 is still fresh in the minds of those who visited Minnesota at that time. Minneapolis with its greatly increased hotel facilities and its new $3,000,000.00 Auditorium is excellently equipped for holding this convention. The

Hennepin County Medical Society has well under way elaborate plans for demonstrating to the delegates who assemble in Washington this month the advantages to be obtained by meeting in Minneapolis in 1928.

Every member of our State Association should be interested in obtaining the convention. This proposition should be considered as a state-wide rather than a purely local affair. The members of the Ramsey, Saint Louis and other county societies are in hearty coöperation with the Hennepin County Medical Society in an endeavor to bring the meeting to Minnesota.

It should be remembered that such an issue will be to the advantage of each and every one of us and we should unite wholeheartedly in extending this invitation.

The choice of a meeting place rests in the hands of the Board of Trustees and the House of Delegates. We would suggest that everyone who is in a position to do so write or personally interview the members of the Board of Trustees or House of Delegates with whom they are acquainted. The opportunities offered by our state should be emphasized. Our hospitals and clinical facilities, our university, our highways, lakes, scenery, and vacational facilities are unsurpassed. Minnesotans will have no hesitancy in assuring the governing body of the American Medical Association that no mistake will be made if Minneapolis is chosen as a meeting place in 1928. Let's go!

R. E. F.

MISCELLANEOUS

THE PHYSICIAN'S LIABILITY INSURANCE POLICY

Recently, one of the insurance companies operating in the State of Minnesota refused to renew a liability policy of a physician. The attorney of this company brought out some very interesting points that every physician should know.

"The policy in this case, was refused because the physician was not in the habit of taking the ordinary precautions that are expected of all medical men by the insurance company. The insurance companies find that it is impossible to permit men of this type to have policies at the regular rate as they then would be operating under a loss.

"In buying insurance, you pay for what you will receive as determined by the experience of the company. If you want more, it will be necessary to raise the rate. If all the physicians in the state, including the one whose policy was refused, were to be insured by us, your rate would have to be raised. In the case discussed the chief neglect was the failure to follow up serious injuries to which first attention had been given. I would always make a record of my first visit, and notation of my instructions to the patient—when and where he was to report. If he did not report at that time, I would send a registered letter with return card to him, informing him that he should report. This would be pretty good evidence in court that I had not neglected the case.

"There is also another important point, that whenever a patient declines to submit to proper treatment, or declines to obey the instructions of the attending physician, such attending physician should by all means endeavor to secure the signature of the patient, or the person representing the patient, to a statement of the orders or directions which they refuse to abide by, as an acknowledgment that the doctor had made such suggestions, or given such orders, and compliance was refused.

"This particularly applies to those cases where x-rays are required by the doctors, and the securing of same for any reason is refused by the patient; hospitalization is suggested by the doctor and refused by the patient, or those representing the patient; operations are advised by the doctor, and refused; further stay in the hospital is advised by the doctor, but refused by the patient, who insists on leaving; and particularly whenever the patient is leaving the hospital with drainage material in any sinus, the notifying of the patient of such facts should be entered on the hospital records, and the patient's signature obtained to same, thus making a permanent record of the fact that the patient left the hospital with full knowledge and a complete understanding of his exact condition, and the presence of the drainage material.

"Warnings given patients suffering from fractures in regard to any interference with the casts, splints or extensions applied by the attending surgeon should likewise be made a matter of record, with the signature of the patient, or the patient's representative, attached.

"Particularly in those cases where the physical condition or general health prohibits confinement in a cast, or the continued application of traction, and explanation of why such appliances were not used in treating the fracture is of the utmost importance in guarding against the successful prosecution of damage claims and suits later.

"The obtaining of the written consent of both the child, if of reasonable age, and the parent, or the husband and wife, to the performing of an operation and for the removal of diseased organs found during the operation, is likewise very important, if the doctors are to avoid the annoyance connected with defending those suits based upon an allegation of assault, and operation without consent, which are many times very embarrassing from a defense standpoint, for the reason

that in such cases the jury can take the word of the patient, or the patient's friends, or relatives, even though such testimony is wholly prejudiced and entirely false, and base a verdict thereon in the face of an absolutely clean record so far as the doctor is concerned, and the testimony of himself, his assistants, and even hospital employees, such as nurses, etc., to the opposite effect that a thorough understanding was arrived at prior to the operation.

"Many hospitals are now using a printed form of consent, and insist as a routine matter upon same being signed by the patient, and those representing the patient, prior to the performance of any operation by a member of the staff on a hospital patient, and this, if good for the hospital, is certainly fully as important for the protection of the doctor."

While these conditions exist as stated, it seems to be very simple to the insurance people. Yet, it seems to be very difficult for the average practitioner of medicine to understand. We as physicians, cannot understand why the doctor will take so many chances when a little extra effort in the matter of records will prevent so much trouble.

SOME MEDICINAL RECEIPTS OF THE BOIS FORT CHIPPEWAS

Albert B. Reagan

The Bois Fort Indian Reservation, containing 107,519.43 acres, is situated 140 miles northwest of Duluth, Minnesota, and 38 miles south of Fort Frances, Ontario. It surrounds a beautiful sheet of shallow water of three-fourths of a township in area, known as Nett Lake. Its land is variable in condition of soil and possible fertility. One-half of it is swamp and is known to the Indians as "muskeg" land. The non-swamp eastern part is composed of rock ridges of the Couchiching formation, flanked with clay land covered with pine and hardwood forest trees. The western part, which is not covered with swamp, is a sandy region. Nett Lake and its tributary streams occupy the east-central part of the reservation and the Little Fork and Nett rivers cross it. The swamp areas are in the jungle state. The dry land is heavily timbered where not logged off, while wild rice grows in the shallow lake so that it looks like a vast wheat field in summer. The region is practically in the virgin state.

The Bois Fort Chippewas (Ojibwas), who occupy this region, are known by the name Sugwaundugahwininewug ("men of the dense wooded forest").

While doing research work among these Indians when I was Indian Agent at Nett Lake one of my Indian policemen was a medicine man by the name of George Farmer Ne-ba-day-ke-shi-go-kay. He was a man of influence among his people. He also had a sufficient knowledge of his language to be able to write down his thoughts in "Chippewa," though he had never been to any school so far as could be learned.

Once when at his place I accidentally discovered that he had a large note book. His little daughter gave it to me, and on opening it I saw writing in it, but in a language I did not recognize. After a good deal of persuasion, I succeeded in getting him to translate the words, when to my surprise I found that the writing consisted of medicine songs and medicinal receipts.

These were written in Roman script but with phonetic values similar to French. Mr. Farmer let me copy his notes and went over them carefully to see that I had a correct translation of same. The medicinal receipts I here give, as translated.

1. Receipt for medicine for pain in the stomach, also for fainting and trembling fits. If very sick or bad sore apply this medicine externally. Also for cuts, say with an ax, put this preparation on.

Make a tea of all the different roots and barks mentioned below by boiling or steeping same: Swamp spruce, sometimes called black spruce, upland spruce, the pussy willow, tamarack or black larch, Norway pine, white pine, kinnikinick (bearberry), and oak and all the trees that grow south of them. To this add a little sugar to sweeten it.

2. For a cut foot apply tea made from boiling together roots of the rose bush, bitterroot, and elm. A little of this tea is also taken internally for bleeding.

3. For a "bad-sick" stomach or bowels caused by eating too much or for constipation, drink medicine tea of horsetails and horsemint, boiled together.

4. For stomach trouble drink a cupful of tea, prepared by boiling together native peppermint, a rush pepper plant or Lizard's Tail (plant), Minnesota fern, and the roots of the crow berry and "slippery elm."

5. Another remedy for fainting and fits, also used as a blood medicine, is sarsaparilla tea, made from the leaves of this plant. This drink. This medicine is called "Eastern Medicine" by the Ojibwa, as it is the medicine of the Wabeno (Eastern) Society of that people.

6. Another general remedy: Take the roots of the swamp tea plant, kinnikinick (bearberry), a white poplar, and Balm of Gilead Poplar, and pound them to a pulp and stew into a tea. This tea apply to the afflicted parts by placing cloths on same and pouring the tea on the cloths so as to thoroughly saturate them. The pounded roots and bark when hot just from the steeping tray are also applied. This remedy is used much for rheumatism and kindred diseases.

7. The following medicine is to be given for "internal blood diseases": Boil the bark of the following trees and shrubs: white poplar, yellow poplar, white birch, yellow birch, large oak, small oak, small bearberry (kinnikinick), and large bearberry (kinnikinick). Drink the tea thus made.

8. For venereal diseases make a tea of the root-bark of the following trees: ash, oak, white elm, and sugar maple. Then add a little tobacco, after which place it on the south side of a tree far out in the woods. Then when cool, drink a cupful three times a day.

OBITUARY

Dr. Alexander Hamilton Barber

Dr. Alexander Hamilton Barber died March 9, 1927, at Minneapolis of heart disease at the age of of eighty-three. Dr. Barber was a civil war veteran, having been a member of Company C, 2nd Wisconsin, until wounded at Antietam. He obtained his medical degree at the College of Physicians and Surgeons, New York, about 1869. After practicing thirty years at Lancaster, Wisconsin, he practiced for several years at Waukesha before retirement.

Dr. Barber was one of the fine type of old family doctors. Competent and modest, he was a friend to all who knew him. Although he had the misfortune to lose his property in his old age, this did not spoil him. Always cheerful and happy, his influence was felt by his friends and acquaintances.

E. P. Lyon.

Dr. O. H. Urstad

Dr. O. H. Urstad died, at the age of 56, after a week's illness, at his home in East Stanwood, Washington. Death was due to angina pectoris.

Oscar H. Urstad was born in Christiania, Norway, December 24, 1870. At the age of 18 he left his native land and came to New York, later going on to Lake Mills, Iowa, where he held a clerical position in a drug store. In 1896 he began the study of medicine at Central College of Physicians and Surgeons in Indianapolis, Indiana.

Dr. Urstad came to Kiester, Minnesota, in 1900, where he practiced medicine and surgery for 20 years. He did his own surgery, owning and operating a small hospital. In 1920 he sold his practice to Dr. A. J. Henderson and moved to Minneapolis, where he became associated with Dr. C. J. Ringnell (until the latter's death). He was on the staff of the Swedish Hospital of Minneapolis.

In 1924 he moved to East Stanwood, Washington, where he established a large practice.

Dr. Urstad was an active member in medical societies. He was a member of his county and state medical associations, Southern Minnesota Medical Association and the American Medical Association. At East Stanwood he was affiliated with the Snohomish County Medical Society.

In 1907 Dr. Urstad went abroad for further study and took a postgraduate course in the Laege Kursus District, Norway. During the World War he was a commissioned Captain in the Medical Corps, being stationed at Greenleaf, Georgia.

Dr. Urstad was active in civic and religious work, being interested in any constructive enterprise which was for the good of the community. He was mayor at Kiester for several years and also served on the local school board. At Minneapolis he was a member of the Calhoun Commercial Club, the Odin Club, and was associated with the Scottish Rite of Masonry and the Shrine. He was a trustee of Central Lutheran Church. At East Stanwood he joined the Kiwanis Society and was a member of Our Saviour's Lutheran Church.

He is survived by his wife, and four children, and his aged parents. His two daughters are nurses, his two sons are at present at St. Olaf College, Northfield, taking the premedical course there.

OF GENERAL INTEREST

Dr. A. E. Anderson of Minneapolis will spend the summer months in Europe.

Dr. and Mrs. Theodore Tennyson of Minneapolis have returned from California where they spent the past two months.

Dr. Robert Schwyzer, formerly of Blackduck, Minn., has announced the opening of offices at 1508 East Lake Street, Minneapolis.

Dr. Allen K. Krause, of Baltimore, gave a Mayo Foundation lecture in Rochester on the evening of April 7. His subject was "Histogenesis of Tuberculosis."

Dr. Estes Hargis has returned to Rochester from traveling abroad on the J. William White Scholarship, and will spend several more months on service in The Mayo Foundation.

Steps are being taken to build a new $50,000 fireproof building to replace the former edifice of the Children's Preventorium at Owasso, Minnesota, which was destroyed by fire.

Dr. and Mrs. W. L. Smith of Minneapolis sailed April 23 from New York for Europe, where they will travel in France, England, Switzerland and other countries before returning.

Dr. Henry D. Diessner of Minneapolis will sail for Vienna in April for several months' study in skin and genito-urinary diseases. He will return to his practice in Minneapolis in the fall.

Dr. E. J. Palomeque has been granted a leave of absence of six months from his fellowship in The Mayo Foundation. He will spend several months visiting clinics in Europe before his return to Rochester.

Dr. and Mrs. T. L. Birnberg and little daughter sailed April 6 for various points on the Mediterranean. Dr. Birnberg will engage in further postgraduate study in Vienna and Berlin before returning to St. Paul to resume his practice there.

Dr. H. J. Prentiss, Professor of Anatomy, University of Iowa, gave a Mayo Foundation lecture in Rochester on the evening of April 16; his subject was "The Female Perineum." On the afternoon of April 16 he gave a lecture on "The Male Perineum."

A formal invitation to the American Medical Association to hold its seventy-ninth annual meeting in the new municipal auditorium in Minneapolis in 1928 will be presented by Minneapolis physicians at the annual meeting of the Association in Washington, D. C., this month.

Work has been started on the new $50,000 fraternity house on the University of Minnesota campus, which will be owned by Phi Sigma Rho. The house, which will accommodate thirty-two students, is scheduled to be finished September first. It is located opposite Millard Hall.

Dr. and Mrs. John A. Lyng and son of Minneapolis will leave the first of this month for an extended trip in Europe. Dr. Lyng will visit the surgical clinics of England, Scotland and the Scandinavian countries and will also spend considerable time in the surgical clinics of Vienna and Paris.

Dr. Adelaide Woodard, medical missionary at Fatehgarh, India, gave a series of lectures in Minneapolis reeently on the health and educational problems now facing the missionaries working in India. Dr. Woodard practiced in Minneapolis two years previous to her departure for India thirteen years ago.

Mrs. Jennings C. Litzenberg, wife of Dr. J. C. Litzenberg of Minneapolis, died Friday, April 15, at the Abbott hospital, Minneapolis, following a short illness. Mrs. Litzenberg was a leader in civic and musical circles in Minneapolis and was a member of the Republican state central committee at the time of her death.

Dr. John A. Pratt, Assistant Professor of Ophthalmology and Oto-laryngology, of the Medical School, University of Minnesota, has returned from an extended visit on the Pacific Coast. While there he lectured before the Los Angeles, San Francisco, Portland and Seattle Ophthalmological and Oto-laryngological Societies on "Sinus Diseases and their Intranasal Surgical Treatment."

Glen Lake sanatorium at Oak Terrace, Minnesota, has been formally approved by the American College of Surgeons, a signal honor inasmuch as it is one of two such sanatoria to receive approval from this body so far. Requirements for approval inelude those with regard to the type of building, the method of diagnosis and treatment, the keeping of records and the entire organization. The other sanatorium approved is one loeated in New Zealand.

Dr. J. F. Norris, assistant superintendent of the state hospital for the insane at St. Peter, has resigned his position there to join the staff of the Pennsylvania state hospital at Wilkes-Barre, of which Dr. George T. Baskett, formerly superintendent of the Willmar state hospital, is now the head. Dr. Williard J. Hewson has been appointed to succeed Dr. Norris at the St. Peter hospital. Dr. Hewson has been a member of the staff since December, 1925.

The addresses given at the Northwest Conference of Child Health and Parent Education reeently held in Minneapolis are to be published in book form at an estimated cost of $2.00, it has been announced. The edueational influenee of this conference, it is felt, may be widely extended through the individual or group study of these addresses presented by leading authorities in child study and parent education. Advance subseriptions for the book are being invited. Members of the profession desiring to obtain eopies of the book should communieate with Dr. R. O. Beard, Secretary, 625 Sexton Building, Minneapolis, Minnesota.

The new Webber Hospital and Clinic in West Duluth was opened in March. Associated in the new institution are the following: Dr. Webber, chief surgeon and dean; pediatries department, Dr. S. N. Litman, a native of Duluth and graduate of the University of Minnesota medieal school; internal medicine department, Dr. O. L. McHaffie, graduate of the North Dakota university, and the medical school of Northwestern university, and Dr. Arnold O. Swenson, graduate of the medical sehool of the University of Minnesota, both now located in West Duluth, and Dr. Paul Swenson, graduate of the University of Minnesota medical school, now at the Proctor hospital; dental department, Dr. Harold S. Woodruff, graduate of the Minnesota "U" dental school.

The following physicians have been assigned recently as fellows in The Mayo Foundation:

Majoring in Surgery.—Dr. C. Grant Bain, Tofield, Alberta; Dr. Hamilton Cooke, Minneapolis, Minn.; Dr. Finis G. Cooper, Huntington Park, Calif.; Dr. David C. Ditmore, Buffalo, Ill.; Dr. Wilmot C. Foster, Portland, Oregon; Dr. C. Oliver Heimdal, Deerfield, Wis.; Dr. Wilbur W. Holland, Aberdeen, Md.; Dr. George E. Malmgren, St. Paul, Minn.; Dr. James M. Marshall, Tooele, Utah; Dr. Hamline Mattson, Minneapolis, Minn.; Dr. David Metheny, Philadelphia, Pa.; Dr. H. T. R. Mount, Springfield, Ont.; Dr. Edward H. Ray, Auburn, Ala.; Dr. Lloyd T. Sussex, Hope, N. Dak.; Dr. Fred R. Thompson, Chicago, Ill.

Majoring in Medicine.—Dr. Harry A. Daniels, Eveleth, Minn.; Dr. David G. Ghrist, Hollywood, Calif.; Dr. Harry M. Margolis, Pittsburgh, Pa.; Dr. Wallace T. Partch, Greenaeres, Wash.

Majoring in Ophthalmology.—Dr. William A. S. Magrath, Wynyard, Sask.; Dr. James S. White, Covington, Ga.

Majoring in Neurologic Surgery.—Dr. William A. Bunten, Worland, Wyo.

Majoring in Pediatrics.—Dr. Roland E. Nutting, Minneapolis, Minn.

Majoring in Neurology.—Dr. Curtis T. Prout, Portchester, N. Y.

Majoring in Pathology.—Dr. Dale L. Martin, Orland, Calif.

At the annual meeting of the Federation of American Soeieties for Experimental Biology held at Roehester, New York, April 14, 15 and 16, the following Minnesota physicians appeared on the program:

M. H. Power, Roehester: A study of the blood by vivi-dialysis.

Jesse L. Bollman and Frank C. Mann, Rochester: Chronie duodenal ulcer in animals with Eck fistula on eertain diets.

F. H. Scott, Minneapolis: Decorticate rigidity.

Edward C. Kendall and Edgar J. Witzeman, Rochester: Potentiometric studies of the oxidation and reduction of epinephrin and related compounds.

L. G. Rowntree, Rochester: Studies in experimental tuberculosis.

Walter C. Alvarez, Rochester: Motion pictures of gastro-intestinal peristalsis.

Mary Whelan, Minard F. Jacobs and Norman M. Keith, Rochester: The action of ammonium salts.

Irene Sandiford and Kathleen Sandiford, Rochester: The effect of thyroxin on a subject on high carbohydrate diet.

Carl H. Greene, Martha Aldrich and L. G. Rowntree, Rochester: Studies in the metabolism of the bile acids.

F. C. Mann, Charles M. Wilhelmj and Jesse L. Bollman, Rochester: The specific dynamic action of glycocoll and alanin with special reference to the dehepatized animal.

Samuel Amberg, Rochester: Filtration through living membrane.

F. F. Nord, Minneapolis: On the mechanism of enzyme action.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

A tentative program has been adopted for the 59th annual meeting of the Minnesota State Medical Association which will be held at Duluth, June 30, July 1 and 2. Speakers are of unusual prominence, and the program indicates that it will be one of the best of the many successful programs held by the State Association.

Dr. M. L. Harris of Chicago has agreed to speak on the subject of Contract Practice at the Medical Economics meeting Thursday evening. Dr. Harris has been for years the chairman of this committee of the American Medical Association and will bring authoritative information concerning this vital subject.

The program has several symposiums which will appeal to every member of the profession. Among these are:

Symposium on Gynecology
Dr. J. O. Polak, Prof. of Obst. and Gyn., Long Island College Hospital, and
Dr. C. H. Mayo and Dr. J. C. Litzenberg

Symposium on Gallbladder and Liver
Dr. B. R. Kirklin, Rochester, and

Discussors
Dr. J. P. Schneider of Minneapolis and
Dr. Robert O. Earl of Saint Paul

Symposium on Gastro-Intestinal Tract
Prof P. M. Hickey, Prof. of Roentgenology, University of Michigan, with
Dr. C. B. Wright of Minneapolis,
Dr. W. C. Alvarez of Rochester,
Dr. D. C. Balfour of Rochester and
Dr. J. A. Bargen of Rochester.

Symposium on Diseases of the Circulatory System
Dr. Ralph Major, Professor of Medicine, University of Kansas, and
Dr. W. S. Middleton, Associate Professor, Clinical Medicine, University of Wisconsin
Dr. B. J. Clawsen of Minneapolis

Dr. C. N. McCloud of St. Paul

Discussor
Dr. H. W. Cook of Minneapolis.

Symposium on Pulmonary Tuberculosis
Dr. A. A. Law of Minneapolis
Dr. H. E. Robertson of Rochester

Discussors
Dr. S. W. Harrington, Rochester
Dr. F. F. Callahan, Pokegama.

The Hotel Duluth will be the headquarters for the next annual meeting of the State Medical Association.

The following committees have been appointed by the St. Louis County Medical Society:

Dr. F. H. Magney, Chairman Local Arrangements Committee

Dr. Hilding C. Anderson, Convention Secretary.

Banquet and Entertainment:—Dr. C. A. Scherer, Dr. F. J. Elias, Dr. M. M. Fischer, Dr. Gordon MacRae, Dr. D. E. Seashore, Dr. Frank W. Spicer.

Clinical Material:—Dr. C. O. Kohlbry, Dr. J. R. Manley, Dr. L. L. Merriman, Dr. D. F. Pennie.

Convention Hall:—Dr. Robert S. Forbes, Dr. John E. Power, Dr. P. S. Rudie, Dr. T. O. Young.

Exhibits:—Dr. B. F. Davis, Dr. P. G. Boman, Dr. F. J. Lepak.

Publicity:—Dr. E. Z. Shapiro, Dr. E. L. Cheney, Dr. W. C. Martin.

Reception:—Dr. J. R. Kuth, Dr. L. A. Barney, Dr. E. L. Tuohy.

Reunions and Lunches:—Dr. W. G. Strobel, Dr. S. E. Urberg.

Hotel Accommodations:—Dr. T. G. Clement, Dr. L. R. Gowan, Dr. W. E. Hatch, Dr. Harry Klein, Dr. F. N. Knapp.

Civic Clubs:—Dr. C. L. Haney.

Arrangements are being made to have a reunion of the Class of 1902 of the Medical School of the University of Minnesota. There will also be a reunion of the Rush Medical Alumni.

Dr. W. G. Strobel, 2131 Woodland Avenue, Duluth, is chairman of the Committee on Reunions and Lunches, and would like to hear from any fraternities, etc., who desire to have meetings in connection with the annual meeting.

It is important that all notices to be printed in the program for the fifty-ninth annual meeting be received at the office of the secretary, 11 West Summit Avenue, Saint Paul, before May 12.

SUMMER CLINICS, CHICAGO MEDICAL SOCIETY, 1927

Announcements and schedules will soon be ready for the 1927 Summer Clinics of the Chicago Medical Society, supported by many of the largest hospitals in the city, among them being the Post Graduate Hospital, Chicago Memorial Hospital, University of Illinois College of Medicine, Cook County Hospital, Michael Reese Hospital, Mercy Hospital, Presbyterian Hospital, Jackson Park Hospital, St. Luke's Hospital, Ravenswood Hospital, Mount Sinai Hospital, Frances Willard Hospital, West Suburban Hospital, Evangelical Hos-

pital, North Chicago Hospital, Chicago Lying-in Hospital, St. Joseph Hospital, Alexian Brothers Hospital, Laboratory of Surgical Technique, Washington Park Hospital, Jackson Park Hospital, Chicago Municipal Tuberculosis Sanitarium, John B. Murphy Hospital. Several large laboratories have also agreed to co-operate in this great work.

In 1926 registrations were limited to physicians living in Illinois, but increased facilities make it possible to accommodate many more than last year. Registrations therefore will be open to physicians from other states and to as many as may be accommodated, in the order of their registrations. Registration fee will be $10 for eaeh two weeks course, payable at time of registration, and a physician may register for only one course of two weeks.

Admission will be by eard only, issued by the Chicago Medical Society, and no registration card will be issued until registration fee is paid.

The first two weeks course will begin on Monday, June 13, 1927, at 9 a. m., ending Friday, June 24.

The second two weeks course will begin on Monday, June 27 at 9 a. m., ending Friday, July 8.

This is an excellent opportunity for the medical men of the country to obtain real post-graduate work in some of the best hospitals in the world, and from some of the best clinicians found anywhere.

Schedules will be sent to the 10,000 physicians in Illinois, and announcements will be sent to the American Medical Association, and the several state medical journals.

It will probably be impossible to accommodate all those desiring this wonderful clinical course, so it behooves those in Chicago and Illinois to register early if they desire to take advantage of this year's summer elinies. Last year registrations closed one week after the first announeement.

INTER-STATE POST GRADUATE CLINIC ASSEMBLIES OF NORTH AMERICAN PHYSICIANS IN EUROPE, 1927

The foreign assemblies of the Inter-State Post Graduate Medieal Assoeiation of this year offer wonderful elinieal and sightseeing advantages for members of the profession and the offieers of the Assoeiation have been assured by the most distinguished teaehers and clinicians of the elinic cities to be visited that the members of the assemblies will receive a most hearty weleome and everything possible will be done to make the visit to the clinic centers of the Old World of great value.

The American Express Company is arranging exeellent sightseeing programs in eonneetion with and included in the priee of the trip. There never has been and probably will not be for a number of years to come so many wonderful advantages, due to the fact that the members of the assemblies are going abroad on invitation from the leading universities and medical institutions, as well as the governments of the countries to be visited.

When one travels abroad alone or without the advantages of being invited as a guest of foreign countries, there are many unpleasant factors which are entirely obliterated when you go as one of a large family, which this party will be, and receive the kindest possible courtesy and hospitality of the distinguished hosts.

Any physician who desires to become a member of the group should register at once by sending in the reservation fee of $65.00 per person. Registration is limited to members in good standing in their State or Provincial societies. The deposit is requested in order to meet the requirements of the steamship companies and will be applied on the price of the trip. If you find that you cannot go, the money will be refunded, if demand is made as early as six weeks before sailing time. The money may be paid to Dr. W. B. Peck, managing-director, Freeport, Illinois, or the travel department of the American Express Company, 65 Broadway, New York, N. Y. In case of the latter, we suggest that the physician notify the managing-direetor when he sends the amount so that he can register him for the clinics.

The first section will sail from New York, May 21st, and the section section, June 18th. The countries to be visited by both sections are England, Scotland, Norway, Sweden, Denmark, Germany and Franee. Norway, Sweden and Denmark are included in this year's assemblies on aecount of these countries offering the very finest opportunities for medical study, and in taking this action we are complying with the requests of a large number of the members of the profession of North America.

The price of the assemblies, which includes everything, except tips on board ship, passport and other personal expenses such as laundry, theaters, souvenirs, etc., is $1,095.00.

The elinics and demonstrations connected with the assemblies will include all the different branches and specialties of medical science. It will be the endeavor of the Association to see that every braneh of medieine receives the same consideration on the program Special sightseeing and entertainment arrangements will be made for the ladies while the physicians are busy in the clinics.

At present over 150 individuals have registered for the trip and as 200 is the limit that can be accommodated without crowding, physicians desiring to make the tour should register at once.

Following is a list of physieians in Minnesota and Montana who have already registered:

Dr. and Mrs. J. G. Ericson, Minneapolis; Dr. and Mrs. C. L. Larsen, St. Paul; Dr. E. T. Lindgen, Miss Peggy Lindgren, Duluth; Dr. J. William Parker, Roehester; Dr. H. J. Thornby, Moorhead; Dr. J. H. Garberson, Miles City, Montana.

WASHINGTON COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Washington County Medical Society was held April 5, 1927, with a six o'clock dinner at the Grand Cafe, Stillwater. The principal speaker of the evening was Dr. J. P. Schneider of Minneapolis and his subject was "Pernicious Anemia." The talk was illustrated with lantern slides.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ABBOTT LABORATORIES

Abbott's Mineral Oil Emulsion

Ephedrine Hydrochloride-Abbott

ELI LILLY & CO.

Ephedrine Sulphate-Lilly

Pulvules Ephedrine Sulphate-Lilly, 0.025 Gm.

Pulvules Ephedrine Sulphate-Lilly, 0.05 Gm.

Ampoules Ephedrine Sulphate-Lilly, 1 c.c. 0.05 Gm.

Solution Ephedrine Sulphate-Lilly, 3 per cent.

E. R. SQUIBB & SONS

Scarlet Fever Streptococcus Toxin-Squibb, 1 c.c.

TOWT-NOLAN LABORATORY

Lactobacillus Acidophilus Milk (Towt)

NON-PROPRIETARY ARTICLES

Ephedrine

TRUTH ABOUT MEDICINES

Ephedrine.—Ephedrine is an alkloid first obtained by Nagai in 1887 from ma huang (*Ephedra equisetina*). Chemically, ephedrine is a hydroxy-B-methylaminopropylbenzene. Structurally, it is closely related to epinephrine. Its salts are, in general, soluble in water and in alcohol, and the solutions are stable. Ephedrine produces effects similar to those produced by epinephrine. It also has been found to exert a direct depressant action on smooth and cardiac muscle. It produces a rather lasting rise of blood pressure, on intravenous or intramuscular injection, due mainly to vasoconstriction. Thus far, the most definite indications for the usefulness of ephedrine are for its local use on the turbinates and for ophthalmic examinations. Ephedrine has proved effective in some cases of asthma.

Ephedrine Hydrochloride.—The hydrochloride of an alkaloid obtained from *Ephedra equisetina.* For a discussion of its actions and uses, see preceding abstract "Ephedrine."

Ephedrine Hydrochloride-Abbott.—A brand of ephedrine hydrochloride-N.N.R. Abbott Laboratories, North Chicago, Ill.

Ephedrine Sulphate.—The sulphate of an alkaloid obtained from *Ephedra equisetina.* For a discussion of its actions and uses, see preceding abstract "Ephedrine."

Ephedrine Sulphate-Lilly.—A brand of ephedrine sulphate-N.N.R. Ephedrine Sulphate-Lilly is also marketed in the form of Pulvules Ephedrine Sulphate-Lilly, 0.025 Gm.; Pulvules Ephedrine Sulphate-Lilly, 0.05 Gm.; Ampoules Ephedrine Sulphate-Lilly, 1 c.c., 0.05 Gm.; and Solution Ephedrine Sulphate-Lilly, 3 per cent. Eli Lilly & Co., Indianapolis. (Jour. A. M. A. March 19, 1927, p. 925.)

Lactobacillus Acidophilus Milk (Towt).—A milk culture of *B. acidophilus* which contains not less than 250 millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1926, p. 211, "Lactic Acid-Producing Organisms and Preparations." Towt-Nolan Laboratory, Oakland, Calif.

Scarlet Fever Streptococcus Toxin-Squibb (New and Non-official Remedies, 1926, p. 368).—This product is also marketed in packages of three 1 c.c. vials, each containing 30,000 skin test doses. E. R. Squibb & Sons, New York.

Glaseptic Ampoules Sodium Cacodylate-P. D. & Co., 0.05 Gm. to 0.45 Gm. (1 c.c.); 2 c.c.; Glaseptic Ampoules Sodium Cacodylate-P. D. & Co. (for Intravenous Use), 0.2 Gm., 5 c.c.; Glaseptic Ampoules Sodium Cacodylate-P. D. & Co. (for Intravenous Use), 0.45 Gm., 5 c.c.: Glaseptic Ampoules Sodium Cacodylate-P. D. & Co. (for Intravenous Use), 1 Gm., 10 c.c. For a discussion of the actions and uses of sodium cacodylate, see Useful Drugs, Seventh Edition, p. 133. Parke, Davis & Co., Detroit. (Jour. A M. A. March 26, 1927, p. 1003.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of February 9, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, February 9, 1927, at 8 o'clock. Dinner was served at 7 o'clock.

The meeting was called to order by the Vice-President, Dr. J. E. Hynes. There were 30 members and 3 visitors present.

The minutes of the January meeting were read and approved.

DR. R. E. FARR (Minneapolis) reported a case of Ulcer of the Stomach, as follows:

The custom of reporting our successes before medical societies has become so well established that I feel it worth while to confess one of my errors before this body.

I report the following case for the purpose of illustrating a missed diagnosis, due to the misinterpretation of films by a radiographic expert and myself, and because of the further fact that, through the force of circumstances, I allowed myself to be hurried into the performance of an operation without employing measures which might otherwise have resulted in a definite pre-operative diagnosis with the satisfaction that attaches thereto.

Mr. K., age 59, entered St. Mary's Hospital on January 13, 1927, being referred by a group of physicians who had endeavored to make a diagnosis by taking the history, making a physical examination and inducing the patient to submit to a radiologic examination at the hands of a recognized expert.

The case was referred to me under the following conditions. While I was operating, one of the physicians who had been investigating the patient entered the operating room and stated that he would like to have me operate upon a patient on the following morn-

ing. I demurred, stating that I desired more time in which to investigate the case. He stated that the patient had an epigastric tumor of some months' duration, was practically without gastric or duodenal symptoms and presented, in writing, the radiographic report, which is as follows:

"A series of plates and fluoroscopic examination made immediately after a barium meal show the stomach normal in size, shape and position. There is no evidence of a lesion involving the stomach and at the pyloric end. In addition there is considerable dilatation of the entire duodenum.

"Examination at six hours shows the head of the column in the ascending colon, the tail in the lower ileum.

"Examination at 24 hours shows the head of the column in the rectum, the tail in the cecum. Cecum is freely movable. The appendix is not visualized and there is no localized tenderness on pressure.

"Conclusions: There is no evidence of cancer or ulcer of the stomach and no evidence of duodenal ulcer. There is evidence of an extra-gastric mass in the right upper quadrant of the abdomen which is causing a pressure deformity on the stomach and some adhesions and stasis in the duodenum. This, I believe, might be either gallbladder involvement or pancreatic tumor.

"Signed.....M.D."

The referring physician stated that he had seen the patient three years before in a rather severe attack of epigastric pain, that the patient was laid up for a short time and that he considered it a "sprain" of the right rectus muscle. He stated that the patient's history was practically negative from the standpoint of gastric symptoms. With this information, the *x*-ray report, and a fixed, plainly palpable tumor midway between the xiphoid and the umbilicus, a diagnosis of pancreatic cyst seemed probable.

This conversation took place on Thursday and as the physicians could not be present on Saturday and stated that the patient would not consent to wait until Monday, I reluctantly agreed to operate Friday.

The patient entered St. Mary's Hospital on Thursday evening, where he was seen by my associate, Dr. Caron, who telephoned me the history and findings which were as follows:

History: Patient, a male, 59 years of age, states that except for rheumatism forty years ago he has never been previously ill. His present complaint is gastric fullness. The patient states that for the past year he has noticed a sense of fullness or tightness over the epigastrium occurring after meals. These symptoms gradually disappear and seem to be aggravated by intake of more food. The pain is not of a burning nature, is not referred; soda has not been tried; nausea or vomiting has never occurred. There has been no loss of weight and no jaundice at any time. The course has been progressive; that is, the sense of tightness over the epigastrium following meals seems to be slightly worse of late when large amounts are taken. Although the above mentioned symptoms are the patient's present complaint, his reason for consulting a doctor was a sudden, sharp, cramp-like pain in the epigastrium which occurred a week ago while trying to lift a heavy block. This pain was sharp and cramp-like, localized over the epigastrium, lasted but three or four minutes. However, the sense of stiffness and soreness over the abdomen did not subside. The patient then consulted a doctor. The doctor took the history, examined the patient, and advised gastrointestinal *x*-rays.

The physical examination reveals a fairly well-nourished male, not acutely ill. Temperature 98.6, pulse 70, respiration 18, and blood pressure 125/80.

The essential findings consist of a tumor in the epigastrium. Palpation and percussion show a tumor mass which is not movable except on respiration. Tenderness is present but not exquisite. There is no rigidity of the abdomen. Other organs are not palpable. Regional examination is essentially negative.

I did not see the patient on Thursday evening and arrived at the hospital late on Friday morning to find him already upon the operating table. I then made a careful physical examination, finding a rather fixed tumor mass in the upper abdomen at the midline. It was not tender, and, as the radiographic report stated that it was extra-gastric and extra-duodenal, I made a tentative diagnosis of a pancreatic cyst. (A cursory examination of 12 radiographic films did not aid me materially in arriving at a definite conclusion.)

The operation under local anesthesia was proceeded with at once and a transrectus incision with a vertical incision upward at the midline was made.

Pathology: A chronic duodenal ulcer attached to the parietal peritoneum was encountered. An indurated tumor the size of a lemon presented, with extensive peri-duodenal adhesions. The lesser curvature and duodenum were freely mobilized after the method of Finney, and a Bilroth I performed after excision of the tumor. (Frozen sections showed that the tumor was benign.) The duodenum was divided diagonally and except for a rather serious post-operative heart block (his pulse during the operation remained below 70), the patient has made a rather good recovery. He is now daily taking 1,800 calories and 2,500 c.c. of fluid and is being mildly alkalinized, as his acidity continues low. The stomach is lavaged once a day with a solution of sodium bicarbonate.

Comment: This case is reported for the purpose of admitting preoperative mismanagement. I feel that I should have delayed the operation until I had had sufficient time in which to:

(a) check personally the patient's history;

(b) investigate more thoroughly the condition of the myocardium;

(c) employ pneumo-peritoneum for the purpose of ascertaining whether or not the tumor was retroperitoneal;

(d) more carefully studying the films (the constant presence of a shadow over 1 cm. square in 10 of the 12 films should have been suggestive of ulcer). Radiograms shown.

(e) further, a radiogram taken in the transverse diameter with the patient lying upon his back would have

demonstrated the duodenum firmly attached to the anterior abdominal wall;

(f) as all cases of gastric surgery should be preceded by at least 2 days of the administration of sterilized food and meticulous attention to oral asepsis, this feature would have been attended to.

(g) In such cases it is not unusual to neglect to sterilize the instruments employed for gastric and duodenal surgery, thus resulting in preventable delay when the pre-operative diagnosis is incorrect.

I feel that, notwithstanding the fortunate outcome, this report may be the means of calling attention to some of our shortcomings which result from the force of circumstances and which may be reduced to a minimum by the exhibition of a somewhat more authoritative attitude on the part of surgeons when similar exigencies arise.

Dr. Carl B. Drake (St. Paul) reported a case of Amebic Dysentery treated with Stovarsol:

Mrs. D., age 26, came to the office June 3, 1926, complaining of dysentery of three months' duration. At first she had watery stools with considerable mucus and some blood as often as 25 a day. A year previous she had had a diarrhea for a week. Her appendix had been removed in 1924. She had lost 24 pounds since her marriage four years previous. Tonsillectomy had been performed 10 years before. Recent *x*-ray examination had failed to show any abnormality of the gastro-intestinal tract and the institution of a very bland diet of boiled milk, burnt flour, soup and gruels had failed to relieve the condition. Of late the bowel movements had been most frequent mornings and evenings, very little trouble having been experienced at night. There was fever at first and a few canker sores in the mouth lately. She had not been out of the city during the past year.

Examination showed a poorly nourished young woman weighing 100 pounds; her normal weight being 128 pounds. There were a few ulcerated areas in the mucous membranes of the mouth. Aside from a slight tenderness in the region of the appendectomy scar nothing abnormal was found. The stomach acidity was free HCl 10, total acidity 18. Proctoscopic examination showed an inflamed mucous membrane, some mucus, but no ulceration. The blood hemoglobin was 43 per cent, r.b.c. 5,000,000, w.b.c. 10,000. Temperature, pulse and blood pressure were normal.

Motile entamebæ histolytica were found on first examination of the stool by Dr. Warwick.

The patient was put to bed in the hospital and treated energetically for three weeks with emetin hydrochloride gr. ½ twice a day for a week at a time, emetin bismuth iodide gr. 1 by mouth three times a day after meals, quinin retention enemas, bismuth subcarbonate hourly for a time, but with only slight improvement.

For the next two and a half months the patient received courses of emetin intramasculary, bismuth, fluid extract of chapparo amargosa, emetin bismuth iodide orally off and on, but became progressively weaker and more emaciated.

On September 25 all medication was stopped, a more liberal diet was given, and stovarsol tablets (0.25 gm. each) orally after meals were administered for five days. Some improvement was noted. After taking no medication for the succeeding five days, the tablets were resumed and in two days twenty-four hours passed without a bowel movement for the first time in seven months.

The patient was in the office today and looked well. She had gained 13 pounds in weight. Her hemoglobin had increased to 75 per cent. She has had a slight diarrhea for a day at a time, having from one to six stools in 24 hours about every two weeks. This has been promptly relieved by commencing the stovarsol.

Examination of the returned soldiers after the World War showed some 12 per cent infected with the entameba histolytica. Various reports indicate that about 10 per cent of the civilian population of the northwest portion of this country is similarly infected. Why all so infected do not have symptoms of dysentery is not clear. Craig believes the infection produces symptoms in 50 per cent or more of the carriers. He mentions constipation relieved periodically by diarrhea for a day or two, loss of appetite, loss of weight, slight anemia. Buie thinks the infection is secondary ofttimes in cases of chronic ulcerative colitis which he believes is caused by Bargan's lanceolated diplococcus. The relation of the infection to certain cases of iritis is probably not proven as yet.

When we consider the extensiveness of the intestinal infection even in carriers it is remarkable that all those infected do not present symptoms.

My attention was called to stovarsol by an article by John and Jamison which appeared in the Journal of the A. M. A., June 20, 1925. All of 46 cases, both acute and chronic, were relieved in 3 to 6 days of all dysentery symptoms with 0.5 to 1 gm. of stovarsol daily. Dr. P. W. Brown of Rochester informed me that 85 per cent of their cases have responded to stovarsol alone.

The preparation is the acetyl derivative of arsenic acid and contains about 27 per cent arsenic. It comes in tablets of 0.25 gm. and may be given three times a day after meals for five days with ten-day periods of rest.

DISCUSSION

Dr. Head (Minneapolis): Are there still amebæ in the stools?

Dr. Drake: That has not been checked up.

Dr. Gardner (Minneapolis): Dr. Drake referred to the frequency of infection with pathogenic entameba. I know that statements have been made by workers of the Pacific coast that amebæ are extremely common in normal people and can be found in the stools. This was only partially confirmed by work at the Mayo Clinic in the cases which they studied. In our experience, we have examined several thousand stools and have found parasitic infections very uncommon. In an informal discussion at Dallas last summer, some southern parasitologists stated that they did not find the infection in the south as frequently as those on the

Pacific coast would indicate. I wonder whether large phagocytic cells frequently found in stools, especially when mucus is present or other signs of colonic irritation exist, are not being mistaken for amebæ. I cannot help but feel that amebic infection is rare in this locality, although we should approach the subject with an open mind.

Dr. Gilfillan (St. Paul): I have had occasion to look up the action of arsenic in dysentery and apparently it does good in the non-entamebic form of colitis also. First neoarsphenamine was used intravenously. Then a Frenchman used neoarsphenamine in solution by mouth, with good results, and then had the neoarsphenamine put up in gluten-coated pills, because it oxidizes rapidly and loses its strength. Then he used stovarsol, treparsol, and all of those, and he thinks arsphenamine is the best of all. He points out that emetin and ipecac help in the acute stages of the disease but they don't kill the organisms; then there comes a stage when they no longer do any good. Then arsenic does good. He has cases that he has tried these remedies on; their amebæ disappear but if the remedy is stopped for a few days they come back again in a little while and they cannot be eliminated in a few days. He gives arsphenamine in compressed tablet form, 0.2 gm., and gives ½ to 1 gm. by mouth for a number of days and continues with small doses. He has tried it out on carriers and it causes amebæ to disappear from the bowel. He tells of one experiment of a man who took ameba stools in capsules and at the same time took stovarsol and did not develop a dysentery. He got only one man to do this so his series is not a long one. Apparently they have found something which does good in dysentery and in other forms of colitis too. I have today started a case on arsphenamine in severe dysentery.

Dr. McCloud (St. Paul): I know very little about entamebæ, but have recently had occasion to review the literature on the subject. We recently had an aplicant for insurance from Indiana giving a history of having dysentery in 1924, amebæ in the stools, and he had lost 85 pounds. After taking three bottles of stovarsol, his symptoms all subsided, and he was pronounced cured.

The question arises, is he now insurable at standard rates? I was granted access to a book on tropical diseases published by the United Fruit Company, who maintain nine hospitals in South and Central America and who, of course, have had a wide experience in the treatment of this disease. They have tried stovarsol but have come to the conclusion that it is no more effective than the bismuth and emetin treatment as used by Dr. Deeks, who is Medical Director of the United Fruit Company.

I have read Drs. John and Jamison's articles and do not gather that they regard this as a specific remedy. Tice, commenting thereon, states that they have found in stovarsol a harmless remedy for amebic dysentery that compares quite favorably with anything previously employed.

I wonder if any one can tell me of the complications to be expected in these cases. I am thinking especially of liver complications. We meet this question very rarely in insurance but it would be interesting to know what complications we might expect.

Dr. Head: It is important to remember, in connection with these cases of amebic dysentery, that many times, for some reason or other, they show very pronounced improvement no matter what treatment they are put upon. I remember some years ago I had an opportunity of watching over a number of years a veteran from the Philippines in the Spanish-American war, in whom exacerbations and remissions in the disease were very pronounced. At various times we thought we were accomplishing a good deal with the special medication that was being used, but finally came to the conclusion that what we did, did not have very much to do with the remissions. The patient would have a period of relief and then the exacerbations would come on again at certain intervals.

It is well to remember that, pathologically, these amebæ are imbedded very deep in the walls of the colon. It never seemed reasonable to me to be able to kill them out in the tissues without actually killing the cells of the bowel itself. Unless one has a rather large number of cases to observe, it is best to remember that we may have remissions in the disease and therefore our therapeutic conclusions may be erroneous.

Dr. Drake (in closing): After the War I had a chance to see several cases of dysentery. One developed liver abscess, which Dr. Colvin operated, with recovery. I had occasion to look the subject up at that time. I had an acute case a year ago at the Ancker Hospital, which cleared up beautifully under emetin bismuth iodide by mouth and emetin hypodermically.

In this case reported tonight I tried emetin, the Mexican drug called chapparo amargosa, and bismuth by the pound. After I had treated her for about 4 months she was so emaciated that I thought she was going to die. Her improvement under stovarsol was so marked that I thought the case worth reporting. I realize that she probably has amebæ still present but stovarsol has proved so much better than any other medication that I feel it was quite worth while.

Dr. W. A. Jones (Minneapolis) read a paper entitled "A Review of the Modern Studies of Mental Diseases."

ABSTRACT

In preparing this review the writer found that the subject was almost inexhaustible, and he could only comment upon a comparatively few books and articles.

It is quite evident from the investigation of these subjects that we not infrequently overlook the fundamental study of mental diseases, namely the patient himself. Usually a history of the family and the individual reveals within a reasonable time the order in which this individual, in the future, may conduct his life.

Dr. Bassoe refers to the weaknesses of the modern investigator, of which he says there is a needless use

of cumbersome temerity and equally cumbersome and involved style. Consequently they miss much of the attention that they should receive; and the general practitioner and the public at large should open their eyes to the importance of the understanding of morbid mental factors, not only in disease, but in all lines of human activity. Most of the writers on mental diseases refer to the significant trend in modern medicine, and insist upon the fact that the patient is a more interesting subject for study rather than the disease itself, that we should give more weight to the individual, psychologically, physiologically, and biochemically; that is, these various subjects should be investigated in their relationship of one to another.

Dr. George W. Henry, Senior Physician of Bloomingdale Hospital, White Plains, has written a very clever book on the "Essentials of Psychiatry," wherein he refers to his own experience as a student at lectures, where he listened, and became convinced that a more simple and condensed method was necessary to present the subject of psychiatry than had heretofore been employed. He shows his continued interest in the matter by making his subject and book an easy one to read.

Even Mr. James Henry Robinson, in "The Ordeal of Civilization," recommends the methods of the modern physician, who, in dealing with physical and mental dislocation, always asked, "How did he get that way?"

The present medical student is compelled to spend years in acquiring a knowledge of the structure and functions of the human body, but is left with little or no instruction of the activities of the mind, which the body subserves. Then, too, there seems to be a tendency to investigate the probabilities of endorrinism disturbances as an important factor in sexual behavior, manifestation and disturbances, hence it is quite necessary in investigating these people to get at their peculiar sex life from its inception.

Many of these writers criticise the long and intricate classifications of mental disorders, which might easily be reduced to four types, which practically include all forms of mental diseases.

The first group is composed of these psychoses in which disorders are largely psychological in nature; and these include the affective, paranoiac and paranoid, dementia præcox and psychoneurotic disorders. A second group consists of toxic psychoses, disorders due essentially to abnormal physiological conditions and include the toxic infections and exhaustive psychoses. The third group is called the organic psychoses due to actual anatomical changes in the nervous system and particularly in the brain. This group includes infections to the brain, brain tumors, general infections or conditions such as cerebral arteriosclerosis and senility. The fourth group is composed of the constitutional inferiority cases.

Other writers call attention to the fact that the general practitioner is not infrequently responsible for the continuance of mental disorders by not recognizing them early enough.

Dr. E. L. Tuohy (Duluth) gave a lantern slide talk, with slides of *x*-ray plates and case reports, entitled "Some Features in the Diagnosis of Chest Conditions."

ABSTRACT

1. Discussion relative to foreign material entering the lungs via the bronchi. Reference to the usual foreign bodies. The influence of age, decrepitude, throat malignancy, dusting powder inhalation and recurrent laryngeal interference in goiter surgery, aortic aneurysm and general mediastinal invasion.

2. The present status of lipodol injections; also of bronchoscopy. Demonstration of instruments used.

3. Is there such a thing as absolutely diagnostic films of pulmonary tuberculosis?

4. A showing of definite enough tuberculosis films.

5. M. K. No. 50338. Male, age 5 years.

Comment: Here was the story and a roentgen film that certainly did not suggest in any way pulmonary tuberculosis. However, the tuberculous lobar pneumonia is easily enough explained when we see the autopsy findings and the unusual results of hilus gland caseation. There are, no doubt, so definite and consistent classical shadows shown on many films as to make any other diagnosis than tuberculosis quite unthinkable. However, we should conjure with the opposite view, and assume that the roentgen film "can always be diagnostic"; in other words, that it is anything more than an amplification of the infection.

6. Pneumothorax—what a segment of chest looks like without any lung in it.

H. J. No. 43926. Male, age 32, furrier.

Comment: Thus, we had here no history of previous illness, no unusual strain, no accidents. We have records now of 8 such patients, in all of whom complete recovery took place. Indeed, one individual had 3 such attacks—unilateral—all with recovery. There seems to be an attitude in the minds of many good clinicians, which has not outgrown the stage corresponding to the musical development of General Grant: he stated, on occasion, that so far as he was concerned there were only two tunes—the one was "Yankee Doodle" and the other was not. So with tuberculosis—in too many minds any chronic lung condition must be tuberculosis.

7. Empyema and pleuritis; the masking influence of the latter.

M. B., No. 42249. Male, age 38, laborer.

Comment: This is introduced purposely to show that a diffuse shadow, looking like "pleuritis," "a thickened pleura," or a chest supposedly full of fluid, may mask many things. Not the least in this masking is a basic malignancy, as shown here, an obvious blocking of bronchial drainage, and most of the signs that came thereafter were only a complication of the real pathology concerned, *i.e.,* carcinoma of right bronchus, metastases into pancreas.

8. One of the confusing and not uncommon pictures seen in mineralization of the lung.

Comment: A description of this case is not introduced because it was of no particular moment. The man had been a worker in the mines both of England

(tin) and in our own country, in quarries, and elsewhere. Suffice it to say that the roentgen films, while showing a little tendency to fibrosis, gave the extensive mottling that would strongly suggest miliary tuberculosis.

9. Our accumulating knowledge of the roentgen picture of bronchopneumonia.

Miss A. O., No. 91127. Female, age 20, student.

Was this a slowly resolving pneumonia? What is the course, clinical and pathological, of "chronic interstitial pneumonia or Corrigan's cirrhosis of the lung"?

Comment: This record is introduced with the showing of three slides of roentgen films, to show a graphic return to normal after the protracted period of three months, with a series of lung shadows extraordinarily indicative, in their placing and character, of tuberculosis. As our knowledge of the roentgen evidence of broncho-pneumonia enlarges, it teaches us to be very conservative in the interpretation of certain shadows.

10. It is essential and fairly easy to dispose of the gross subjective roentgen lung findings in metastatic malignancy.

Comment: A series of four lantern slides were shown, giving the rather large, sharply circumscribed shadows in the roentgen films of lungs of patients with malignancy in the pelvis and testicle. Such need only be seen to be easily disposed of.

11. But a comparison of miliary metastases (pulmonary) and miliary tuberculosis of lungs renders a differentiation almost impossible.

P. C., No. 51166. Male, age 50, Italian, laborer. (Autopsy showed the primary carcinoma to be in the stomach.)

Comment: The lantern slide of one other instance of miliary carcinosis of the lungs, from a primary carcinoma from the pylorus, was shown together with two accepted and proven instances of films from the lungs of cases of miliary tuberculosis. It was pointed out that with two lanterns in position and projecting these contrasting films—the one of miliary tuberculosis and the other of miliary carcinoma—upon the same screen, careful observers were not able to distinguish which was the one and which was the other.

12. Primary carcinoma of the lung* is not uncommon. (Hodgkin's and allied lymph gland malignancies are quite frequently encountered.)

(a) Primary carcinoma of the lung is not uncommon.

(b) Signs and symptoms are not definite and suggest tuberculosis.

(c) Physical findings are usually unilateral—thus differing from well-established tuberculosis.

(d) Cough is harsh and persistent, often non-productive; and hemoptysis not rare.

(e) Constitutional depression is continuous and persistent.

(f) Roentgen-ray does not yield early evidence; the bronchoscope may.

(g) Postmortems done routinely, so frequently refused in chronic indefinite disease, frequently demonstrate its presence.

Mrs. P. F. S., No. 25377. Female, age 48, housewife.

Comment: In a series of slides of lung tumors this is introduced first, because, while it seems to evidence definite pressure signs indicative of malignancy, the patient has already gone a considerable length of time (nearly 3 years) and appears to be in excellent health. Is it a benign tumor or semi-benign tumor, arising from the pleura, or even originating from a rib? The literature is somewhat obscure, and those who write on the subject of lung tumor are not inclined to believe that there are many benign tumors within the thorax.

G. B., No. 86440. Male, age 44, laborer.

Comment: This case is introduced to draw notable attention to the fact that even where a proven diagnosis of tuberculosis can be made it does not always exclude malignancy. Unless heroic efforts had been made to get an autopsy on this patient, the original contention that he had malignancy would have been supposedly disproved; and again a chronic disorder, accompanied by cough, would have been classified as a primary tuberculosis. Indeed, the remark of Moses, quoted above under "G," deserves our attention.

Mrs. A. A., No. 31112. Female, age 26, housewife.

Comment: This is another instance of malignancy (though unproven by autopsy) which cannot be very well questioned, when one considers the degree of pain the patient endured and the rapidity of the process. Nevertheless, note that in the beginning the shadow suggested to her doctor a purulence or fluid accumulation rather than a tumor

13. Let us not forget the lung hilus; but even more, the mediastinum, with its indefinite boundaries but enormous capacity for crippling the heart when diffusely invaded.

A. S., No. 35473. Male, age 49, Finnish, shipbuilder.

Comment: This history is introduced because it bears out the contention often read in the literature commenting upon the tendency for carcinoma of the bronchus to give metastases into the vertebral column. In this degree it shares the same propensity probably equally with carcinoma of the thyroid. In either case, the steps involved may be fairly silent: in the one, a tumor growth has appeared and developed within the chest to a surprising degree before it is found; in the latter, a long carried and apparently innocent looking goiter suddenly takes on changes involving extreme hardness, and the next step may be the dreaded metastases of the spine.

14. Chronic interstitial pneumonia (Corrigan's cirrhosis). Not a specific lung disease. A fibrous C. T. shrinkage, rarely bilateral. Best known by its antecedents and associated pathology. These include pneumonia, pleurisy, pneumoconiosis, bronchiectasis, syphilis, acute aneurysm and malignant tumors of lung and bronchi. The signs are masked, and generally progressive. Lung shrinkage ensues, dyspnea, heart displacement, clubbing of fingers, heart dilatation and cyanosis.

Allbutt and Rolleston's series gives excellent review, even though now relatively old. In a series of 21,317

*Moses, Henry M., Kings County Hosp., Brooklyn, N. Y., Amer. Jour. Med. Sci., 1925, p. 102.

autopsies, there were found from the years 1857 to 1906, 46 cases of "pulmonary fibrosis." They were divided into 6 groups and, interestingly, a large group of 11 was due to bronchus occlusion.

Note: The pathologists are wont to assert that so-called "unresolved pneumonias" are prone to show at autopsy "chronic pneumonitis" or Corrigan's cirrhosis. If this is a correct observation, clinicians must become more familiar with chronic fibrosing non-tuberculous lung lesions.

15. A brief reference to a heart case.

W. J. H., No. 52287. Male, aged 37, advertising manager.

Pathological specimen shown (syphilitic aortitis). Autopsy showed almost total closure of coronary ostia; also, curiously, a near closure of the opening of the innominate artery (in exactly the same manner) as it left the aorta.

Note: With this singularly healthy appearing subject, might the evidence be fairly adduced that the fact that he came originally from Minneapolis indicate the etiology involved? Or should one consider of more importance the fact that he lived in St. Paul?

DISCUSSION

Dr. S. M. White (Minneapolis): I only want to take occasion to repeat by way of emphasis what Dr. Tuohy says about the diagnosis of tuberculosis and the realization to which we are coming of the frequency with which chronic disorders of the lung, even with cavitation, are found to be non-tuberculous. Our tendency has been to suspect that everything with hemorrhage was tuberculous in origin and we must still bear that probability in mind; but with cavitation, if the sputum is negative on repeated examination, we have often proved that we are dealing with a non-tuberculous condition. Pathologic changes seen through the bronchoscope may reveal that we are dealing with bronchiectasis or some other non-tuberculous condition.

One other point interested me in that particular relation and that is the difficulty that occurs in diagnosis of carcinoma of the bronchus in differentiating from tuberculosis. It brings out what Dr. Tuohy said concerning *x*-ray examination. We are too prone to do two things, *i.e.,* (1) accept the roentgenologist's diagnosis; (2) not follow with excessive enough care all other methods of diagnosis. Carcinoma of the bronchus has in my experience been repeatedly diagnosed by roentgenologists as tuberculosis. I think the reason for that confusion lies in the infrequent occurrence of carcinoma involving the upper portions of the lungs where tuberculous shadows are more common. In bronchial carcinoma we may have extension of shadows to the periphery of the lung, regional lymphatic metastases of the lungs, carcinomatous growth, or possibly both; so unless very great care is used that confusion may lead to serious error.

Dr. Farr (Minneapolis): I want to thank Dr. Tuohy for his splendid presentation of this subject and to mention the work of S. H. Schlueter and I. F. Meidlein of Western Reserve University in regard to the resistance of the lining of the lungs to foreign and even bacterial invasion. Their experiments were carried out upon dogs; there may be a difference in the human subject. It would naturally be a satisfaction to me, should experimental work show that the insufflation of infected material is a common cause of post-operative lung complications. If so, such complications could best be prevented by the use of local anesthesia. Notwithstanding the fact that the lung does tolerate foreign materials to a certain extent, there are many recorded cases in which material that has previously been swallowed is found. From the practical standpoint, I believe that we must agree with the position taken in my book, that even though lung infections are often embolic in origin, such infections would be more easily combated if the lungs were not waterlogged with infected materials from the mouth, nares and stomach.

In malignant conditions of the throat, the onset would be insidious and the lung would soon learn to tolerate the leakage and yet it is significant that lung complications not infrequently follow these conditions.

In goiter cases it is different. Embolism is a rare sequel here. Injury to the nerves can be almost entirely eliminated by asking the patient to speak before incising the tissues.

The *x*-ray is of undoubted value, but the importance of interpretation cannot be too greatly stressed.

In closing, I want to ask Dr. Tuohy if the gentleman with lues whose history was suspicious only because of the fact that he was reared in Minneapolis and was in business in St. Paul, had ever previously been in Duluth?

Dr. Head: I would like to express my appreciation of these cases and mention one or two things that struck me as Dr. Tuohy was presenting them. One thing that ought to be well impressed on all our minds in relation to the mistakes in interpretation of chest conditions, is this, namely, it is a very good idea not to examine the stereoscopic plates or even do an *x*-ray, until you have done a very thorough physical examination of the chest. In other words, don't start your physical examination with a preconceived notion beforehand of what you expect to find. I believe in having these studies done independently. I think it is a good thing to fluoroscope the chest and study the plates, but I think it is a mistake for the clinician to have the roentgenologist's diagnosis before he has made his own independent observations. Like the French scientist's caution to research workers, I think the advice is good for physical diagnosis work, namely, in physical diagnosis one should be very careful not to find exactly what he is looking for.

Another thing I wish to emphasize, namely, that none of the methods which are at hand should be looked upon lightly. We ought to avail ourselves of all the information we can secure and try and reserve our judgment as to what is there, until we have all our findings on hand. Some of us are liable to jump to conclusions, to over-emphasize one special finding that experience has taught us is of considerable value, and

are likely to arrive too quickly at a conclusion which may warp our judgment. If we can hold steady and wait until we have all the evidence at hand we will save ourselves many a diagnostic error.

I have often thought that when we have presented such a clear-cut diagnosis from the roentgenologist, without regard to the history of the case, and studied from only one point of view, that it would be a fine experience if the roentgenologist could be found more often at the autopsy table. I know that especially impressed me in the Army Hospital at Camp Wheeler, Macon, Ga. We would have sometimes eight or ten autopsies daily, and I don't remember ever seeing a roentgenologist at one of them to observe whether the *x*-ray interpretations made by him were correct. I wonder whether these men are checking up their findings pathologically. Therefore, until they have made a more careful study of their diagnosis from the pathological studies, I am not so sure that we should pay so much attention to their diagnosis.

Dr. Tuohy: I wish to thank these men for their comments. It is difficult to cover such a big field in a short space of time. Apropos of what Dr. Farr said as to the experimental work of others, it seemed to me that the position of the patient in this work made a great deal of difference. Under some circumstances a great deal gets down into the lung.

Carl B. Drake, M.D.
Secretary.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

TRIOS CAS D'IMPLANTATION TUBO-UTERINE (THREE CASES OF TRANSPLANTATION OF THE FALLOPIAN TUBE): G. Cotte and Pierre Bertrand (Syon Chir. 1926, 23, 660-666). In the surgical treatment of sterility of tubal origin salpingostomy is the logical operation when there is obstruction at the fimbriated end but futile when the site of the obstruction is in the first portion of the tube or at the cornu of the uterus. This occurs in about 38 per cent of cases. In these, salping-uterine anastomosis has been employed and pregnancy has been reported postoperatively in several instances.

The authors have performed three of these operations, all too recent to have tested the ability of the patients to become pregnant. They have demonstrated the permeability of the tubes postoperatively, however, by lipiodol injections and roentgenograms.

The cornu of the uterus was hollowed out and with a needle passed through the fundus of the uterus and through the hollowed-out cornu, they passed a strand of catgut with which to anchor the tube in the uterine cavity. Once in place the tube is fixed by two sutures, not perforating the tubes.

Rupture of the uterus might occur with pregnancy following this operation when an incision is made in the anterior uterine wall as was done by Strassmann and others, but is not likely to occur when the operation is performed according to the above technic. The other objection to the operation is the possibility of the development of stricture of the tube but it was demonstrated that this did not occur in one case at least, by lipiodol injections six months after operation. Furthermore, the occurrence of pregnancy after the operation has demonstrated its practicability.

Harold E. Simon, M.D.

PHLEGMONOUS GASTRITIS: Karl A. Meyer, William A. Brams and Chester Guy (Surg., Gynec. & Obst., 1927, 44, 301-307). Two cases are reported. This condition is neither extremely rare nor necessarily fatal. Riegel found about fifty reported cases up to 1905 and Brumm reported that 219 cases were described in the literature up to 1925.

The cause of this interesting condition is usually the streptococcus, occasionally a hemolytic staphylococcus or pneumococcus. The mode of invasion is difficult to determine. In some instances it may be a localized point in a focal infection but there are numerous cases in which some local condition such as carcinoma or ulcer could explain its origin.

It may develop either as a localized abscess, usually in the pyloric region, or as a diffuse sero-prulent inflammation of the entire stomach wall, the latter being the more common form. In both varieties it is the submucosa that bears the brunt of the inflammation and some authors believe this layer to be the starting point of the process. This layer increases greatly in thickness, becomes pale and edematous and infiltrated with purulent exudate.

The clinical syndrome is usually severe and consists of the signs and symptoms usually associated with an acute surgical abdomen together with definite septic phenomena.

The onset is usually sudden, with severe abdominal pain, tenderness, vomiting and fever. Vomiting of purulent material is very significant when present but is not very common. The pain closely resembles that in perforating ulcer but is relieved when the patient

sits up and is associated with a fever. The symptoms are constant throughout the course.

The mortality in non-surgical cases has been 92 per cent, but is less when surgery has been employed. The type of operation varies in the individual cases and may consist in resection when the process is sufficiently localized or merely multiple punctures of the gastric wall in the extensive diffuse forms.

HAROLD E. SIMON, M.D.

THE POSITION OF THE ABDOMINAL VISCERA IN HEALTHY, YOUNG BRITISH AND AMERICAN ADULTS: Robert Orton Moody (Journal of Anatomy, 1927, 41, 223-231). Ptosis of the various abdominal organs has been much discussed in medical literature of the last 25 years but there is still much difference of opinion in regard to the significance of these conditions and in regard to what should be considered normal.

To determine the range of the normal position of the abdominal viscera and to establish a basis for a definite and accurate concept of what may rightly be called ptosis, radiographs have been taken of 1,150 men and women, mostly students, not one of whom has a history of chronic gastric or intestinal trouble. The radiographs were taken with the subjects erect.

The interiliac line is used as a level from which to measure the position of the viscera.

In 87 per cent of the British men and in 75 per cent of the American men the lowest part of the greater curvature of the stomach falls below this line, while in 96 per cent of the British women and 88 per cent of American women, the corresponding part of the stomach falls below this line. The stomachs of British men and women therefore are lower than the stomachs of American men and women.

The lowest part of the lesser curvature of the stomach is likewise lower in both sexes in the British; radiographs taken of 44 British boys between the ages of 7 and 14 years indicate that the stomachs of the boys are higher than those of the men.

Comparing the position of the stomach before and after the barium meal it was found that the distance that the lowest part of the greater curvature of the stomach is moved down by the meal varies from a small fraction of an inch to 4 inches, most frequently 1 to 2 inches.

The marked difference in the position of the stomach in the British and the American is probably because the British tend to have narrower, longer thoracic cavities with narrower, shorter abdominal cavities.

With the subject upright, the lower end of the cecum is not often found in the iliac fossa, but usually in the true pelvis (45.6%). The colon has many forms and positions. The lowest part of the transverse colon is most often found between 3 and 4 inches below the interiliac line in males and about one inch lower in females.

It has been suggested by clinicians that it is the people with low stomachs who more often have some form of gastro-intestinal trouble in middle life and old age. Since low stomachs are found in so large a number of young people it would not be strange if, among the elderly people who have gastro-intestinal trouble, many have low stomachs. One hundred patients over forty, who had symptoms of gastro-intestinal trouble were studied and the incidence of low stomachs was less than in the healthy young adults.

The author believes, therefore, that stomachs with the lowest part of the greater curvature as far as 6 inches below the interiliac line, transverse colons dipping far into the true pelvis or ceca with the blind end low in the true pelvis are normal and the ability of these organs to function normally is independent of their position.

HAROLD E. SIMON, M.D.

THE CASE OF POSTOPERATIVE RUPTURE OF ABDOMINAL INCISIONS: Leonard Freeman. (Archives of Surgery, XIV, 1927, 600-604.) While rupture of an abdominal incision does not occur very frequently, it is very disconcerting when it does occur.

The usual explanations given for its occurrence are:

1. The giving way of sutures.
2. Unusual strains, such as coughing, etc.
3. Infection of the wound.
4. Failure of the healing process.
5. The formation of a hematoma.

While any one or several of the things mentioned may play a part in the giving way of abdominal incisions, they often do not appear to be the main factors. In many cases the author believes the primary cause to be inadequate closure of the peritoneum, leaving a gap in the suture line through which the omentum may force itself. This omental protrusion not only interferes with immediate union of the wound, but, as it becomes congested and swollen it acts as an expanding wedge resulting in separation of the tissues and weakening of the wound. Occasionally it may be bowel instead of omentum that protrudes through the peritoneum.

In support of this explanation are the observations: first, that ruptures are more often seen in the central and lower portion of the abdomen where the omentum is most in evidence; second, that tags of omentum have always been found in the wounds in the cases observed by the author; third, the frequent occurrence, in these cases, soon after operation, of tumefaction, serous discharge or unusual discomfort probably produced by such an incarceration; fourth, the well known tendency of omentum to protrude through a stab wound in the abdomen, and, fifth, the certainty with which ruptured wounds reunite when the omentum is swollen and adherent and can no longer enter the wound. A series of experiments have been performed which also seem to confirm this as an etiological factor.

The author urges that in closing the peritoneum greater care should be used by placing the sutures close together, and when the running stitch is employed, it should be drawn tight and frequently back-stitched and locked.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

ACUTE MEDIASTINAL ADENITIS: Rudolph Bloom, M.D. (Arch. of Ped., February, 1927). For the past few years there has been noted by the author many cases of acute illness in children of a grippal type, characterized by fever, rather intense inflammation of the pharyngeal wall, fetid breath, coated tongue, and a certain amount of toxicity greater than that expected from the few physical signs accounting for the clinical picture. The general complaints of these children, most of whom are usually under six years of age, are loss of appetite, considerable deep-seated substernal soreness, a sense of "it hurts me" on swallowing, and a tendency to vomit on taking any kind of food as soon as ingested.

The picture is undoubtedly one of acute respiratory illness; but one is surprised by the entire absence practically of any physical signs in the lungs. The clinical picture slowly clears, the temperature gradually returns to normal at the end of six to twelve days, depending upon the severity of the infection and its extent, the appetite is restored, the cough and deep-seated substernal soreness disappear, irritablity decreases and convalescence occurs. *X*-ray does show some enlargement of the bronchial lymph nodes.

It is not the purpose to present this particular picture, that is here described, as a new disease, for it is believed that it occurs along with, or part of, that disease with such protean manifestations, which we call influenza. It is felt that acute mediastinal adenitis is a definite clinical entity, the presence of which may be suspected by a clinical picture as described above, and definitely determined by *X*-ray findings.

R. N. ANDREWS, M.D.

DIET IN THE DIARRHEA OF OLDER INFANTS: C. K. Johnson, M.D. (Archives of Pediatrics, February, 1927). Observation has been that diet is the important factor in treatment, and that while medicine has its place, it is of secondary importance. As pointed out by Kendall, the intestine harbors both fermentative and putrefactive, as well as other types of bacteria. It has also been pointed out that one may by an increased carbohydrate diet cause a predominance of the fermentative group, and by increasing the proteids cause a predominance of the putrefactive group.

Having arrived at a tentative diagnosis, and planning a diet based on this diagnosis, one will get good results in a majority of cases. If, however, he does not get good results, it would seem that the deductions were wrong, and a diet of opposite character should be tried.

The age element is important, as the younger infants, being usually fed on a formula with an addition of considerable carbohydrate, most frequently have a diarrhea of the fermentative type, while the older infants, being fed on a relatively mixed diet of higher proteid, are more apt to have a putrefactive diarrhea. If one has an infant of three or four months of age who develops a diarrhea while on a bottle with added carbohydrates, with loose stools, of sour odor, and evidently acid as indicated by irritation of the buttocks, he immediately suspects a fermentative diarrhea. The carbohydrates are omitted, the milk and water are boiled, with or without the addition of casein, or the infant can be put on protein milk.

If again one is confronted with an infant perhaps in the second year of life who has a diarrhea, the stools being loose, with a foul odor, and evidently not acid as shown by absence of skin irritation, one would treat this infant quite differently than the previous case and institute a diet with carbohydrate predominating. Preference as to diet in this latter group is malted milk and the starchy foods.

The author finds that a large majority of these older infants, generally over ten months, respond to a starch diet, with or without the addition of malted milk.

One of the newer theories regarding diarrhea seems to be based upon the idea that some infection, as a pyelitis, otitis, etc., is frequently the causative factor. We must not forget the possibility of such etiological factors as excessive heat, over-dressing, poor milk, poor hygiene, a poorly balanced formula and the like.

R. N. ANDREWS, M.D.

THE TREATMENT OF ERYSIPELAS IN INFANTS: Maxwell P. Borovsky, M.D. (Archives of Pediatrics, January, 1927.) During the past eight months at the Cook County Hospital, the author has instituted a method of treatment which seems to have reduced the mortality in infants to that of a very small proportion of the previous figure.

The involved area, no matter how extensive, is painted with 2 per cent mercurochrome, twice daily. It is a question whether this substance exerts its favorable influence by its local antiseptic action or by reaction from absorption. The former is more likely true. Improvement of the condition of the skin underlying the dye is readily determined by the disappearances of the infiltration and of the brawny feel of the skin. The dye is readily removable with acid alcohol, if this is found necessary.

Whole blood, 15 to 20 c.c. from an adult, preferably one of the parents, is injected every third or fourth day. The beneficial effect of the blood is due to three factors: the furnishing of antibodies, nutrition and stimulation of the spleen.

R. N. ANDREWS, M.D.

EYE, EAR, NOSE AND THROAT

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A DETAILED DESCRIPTION OF AN UNIQUE CASE OF RETINITIS STRIATA: George Slocum (Jackson Birthday Volume). A man, aged 30, who ten years before had suddenly and spontaneously lost the vision of his right eye, came in for examination. There is given in great detail a description of the fundus, the essential features of which are (1) diminution in size and color intensity of the vessels; (2) a widespread edema and detachment of the lower half of the retina, apparently progressing slowly toward reattachment as indicated by (3) numerous white, sharply-outlined striations extending horizontally and upward from the disc; (4) numerous white patches and spots scattered throughout the retina, some of these with pigment; (5) areas of diffuse retinal atrophy without exudate.

The white linear striations are interpreted to be lines of demarcation of a choroidal exudate (organized) at the margin of a former detachment now reattached. The latter process apparently progressed a small area at a time, beginning above and leaving now an area of detachment only below, as is so often the case. The upper temporal quadrant was apparently never detached.

VIRGIL J. SCHWARTZ, M.D.

LENS OPACITIES IN DIABETIC PATIENTS: Harry S. Gradle (Jackson Birthday Volume). A series of seventy-six hospitalized cases of diabetes were examined with corneal microscope, slit-lamp, plane mirror retinoscope, and ophthalmoscope for cataractous opacities of any size or density that could be demonstrated anywhere in the lens. Fifty-three per cent were found to have some involvement, twenty such cases being between forty and fifty years of age, eleven between fifty and sixty, and five between sixty and seventy. It must be remembered that not every cataract developing during diabetes can be regarded as a diabetic complication. The latter is most characteristic in younger people, as a bilaterial, subcapsular, rapidly-developing, homogeneous central opacity, becoming perinuclear (*i.e,* approaching the center of the lens) at a later period. The pigment, throughout the entire eye, loosens easily and floats off, frequently as a flood of black liquid. Clinically, however, and especially in older people, it is impossible to differentiate between senile and diabetic cataract. If the diabetes has been so managed that the patient is free of acetone and diacetic acid and the blood-sugar content is at a minimum level, a diabetic cataract may be operated upon quite safely. If these precautions are not taken there may be a loosening and discharge of pigment cells in the aqueous and the danger of infection is increased.

VIRGIL J. SCHWARTZ, M.D.

ROENTGENOLOGY

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STUDIES OF THE ROENTGEN ERYTHEMA OF THE HUMAN SKIN: Ernst Pohle (Radiology, March 1927). Studies were made by means of the capillary microscope of the skin circulation following the administration of one erythema dose of roentgen rays of short wave length. These studies seem to indicate that complete restitution to the former state does not take place. The capillaries are decreased in number, elongated, the wall thickened, the diameter larger, and they respond somewhat slowly to heat and cold. This might explain the late effects frequently seen after repeated erythma doses.

The capillary changes following an exposure to one ultra-violet unit are very similar to those seen after the administration of unfiltered roentgen rays. They differ, however, in that the capillary changes are very brief and only temporary, after a single exposure. Long continued treatment may perhaps lead to chronic changes.

Further investigations dealing with the combined effect of roentgen rays and ultra-violet rays, and repeated exposures, on the skin capillaries will be reported in a later paper.

WALTER H. UDE, M.D.

DETERIORATION OF ANESTHETIC ETHER

According to the U. S. Pharmacopeia X: "Ether to be used for anesthesia must be preserved only in small, well closed containers, and is not to be used for this purpose, if the original container has been opened longer than twenty-four hours." The impurities found in ether are due to the presence of air and moisture, and the action of daylight, which leads to complex oxidations. Among the products found are hydrogen peroxide and most commonly irritant aldehyde. (Jour. A. M. A., Feb. 19, 1927, p. 588.)

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

International Clinics. Vol. I, Thirty-seventh Series, 1927. Edited by Henry W. Cattell, A.M., M.D., and others. 304 pages. Illus. Philadelphia & London: J. B. Lippincott Company, 1927.

The Medical, Social, Economic, Moral and Religious Aspects of Birth Control. S. Adolphus Knopf, M.D. Third editon, revised and enlarged. 66 pages. Illus. Paper, $0.25; cloth, $0.50. New York: American Birth Control League, Inc., 104 Fifth Avenue, 1926.

The Fifth Avenue Hospital Clinics. First Series Based on the Material from the Semi-Monthly Staff Meetings. Edited by the Editorial Board: Joseph H. Forbes, M.D., D. S. D. Jessup, M.D., Milton J. Raisbeck, M.D., and Charles F. Tenney, M.D. 336 pages. Illus. Cloth, $5.00. New York: Paul B. Hoeber, Inc., 1927.

Methods and Problems of Medical Education. Sixth Series. Edited by Richard M. Pearce, Director Division of Medical Education, Rockefeller Foundation, New York. 275 pages. Illus. New York: The Rockefeller Foundation, 61 Broadway, 1927.

HISTORY TAKING AND RECORDING. James A. Corscaden, M.D., Associate in Obstetrics and Gynecology, Columbia University, New York. Price, $1.50, New York: Paul Hoeber, 1926.

This is a very painstaking and concise treatise on history taking. It points out what facts in histories are of value to the attending physician and how they should be obtained from the patient and how best recorded. It is especially valuable for internes and students and could be read with profit by all practicing physicians.

William W. Moir, M.D.

THE TIRED CHILD. Max Seham, M.D., Assistant Professor of Pediatrics, University of Minnesota, and Grete Seham, Ph.D., formerly Professor of Medical Chemistry, University of Minnesota, with a foreword by Isaac A. Abt, M.D. Illustrated. Price, $2.00. Philadelphia and London: J. B. Lippincott Company, 1926.

A great deal has been written during the past few years about functional conditions in childhood. These studies have referred almost entirely to problems in mental hygiene. The present book by the Sehams represents an intensive study of child-life, considering the non-medical conditions usually overlooked though often the fundamental causes for physical symptoms—chiefly fatigue.

The first part of the book is devoted to the study of the normal child. The authors consider his physical, social and mental characteristics during the first few years and conclude that at six years the child is physiologically unprepared for the closed-in curriculum of the schools.

The greater part of the book is devoted to the study of fatigue. This has been carried on in the schools of Minneapolis, in a special nutrition clinic, and in private practice. The fact is emphasized that chronic fatigue is recognized with difficulty because of its insidious nature. The usual symptoms found are poor posture, restlessness, lack of interest and an inability to concentrate.

By means of an unique questionnaire method, the child answers a long list of questions relating to tiring in the morning and in the evening, to his habits of reading, sleeping, playing, and outside activities. He is also asked to describe, in an efficiency questionnaire, any aches or pains, or difficulties with vision and hearing. A similar questionnaire is answered by the mother, and also by the teacher, with a few additional questions pertaining to school life. Finally, the gymnasium teacher answers the same questions. The result is a careful composite study of the life of the child viewed from almost every possible angle. Although there are objections to the questionnaire method, it would seem almost impossible not to receive much valuable information from the method as used by the authors.

It is interesting to learn that tired children average 75 per cent of the required sleep. The remainder of the necessary sleeping period is often spent in going to parties and movies, in listening to the radio, and reading books. Since the antidote of fatigue is play and recreation, parents are urged to cut down as much as possible on extra-curriculum activities, especially in the child who shows evidences of easy fatigability. The social life of the child, especially through puberty, should be cut down to a minimum.

A chapter is devoted to a schedule of home study of school work. The authors advise a maximum of seventy-five minutes of home work for the child during the pubertial period. This is a timely warning to those who force the child to do his maximum work during a period when his functional capacity may be definitely lessened. Stresses and strains are not handled well during the adolescent age.

The authors strongly advise against the fad of teaching children music too early in life. The brain centers that control the necessary coördinated movements do not fully develop till ten years of age, and time spent before this period is not efficiently used.

One realizes, after reading "The Tired Child," that the study of his social life is tremendously important but generally neglected. Too much emphasis, in the past, has been given to the organic pathology of childhood, with the result that medical men in general tend to consider a child well if disease has been ruled out. The authors of this book have found that only a small percentage of their fatigued children need treatment of organic pathology. What they do need is more rest and play and less work, a careful analysis of their functional capacities to see, hear and reason, and an insight into their emotional make-up to prevent the

results of undue pressures. It is only through such studies that fatigue can be avoided.

Each chapter is followed by a complete bibliography, which the student of child study will find very useful.

The book can be recommended very highly to anyone interested in child-life, and especially to the mother who finds that her child tires easily.

HYMAN S. LIPPMAN, M.D.

A DOCTOR'S MEMORIES. Victor C. Vaughan. 464 pages. Illus. $5.00. Indianapolis: The Bobbs-Merrill Company.

This book will be of unusual interest to the physician, for it is written by one of that profession and it is not only the story, well told, of a life of great accomplishment but it is also a history of the development of the science of medicine during the past fifty years. Dr. Vaughan started his interesting, colorful life by a stormy boyhood, due to the unusual conditions of the Civil War. His early education was first from his mother at home and then in several small colleges near his home in Missouri, but in 1874 he went to the University of Michigan, attracted by the excellent chemical laboratory, and here he remained until 1921, for the greater part of that time a member of the faculty. In 1877 he married Dora Taylor, a childhood sweetheart, and she ever afterwards occupied an important place in his life, ambitions and accomplishments. He says of her, "She has been my wise counselor in all the affairs of our joint lives. She has borne and reared to manhood five worthy sons, the eldest of whom sleeps in the soil of France. We have lived modestly, suffering no financial privation and desiring no luxuries. We have ridden in a Ford (our own) without shame and in a Pierce Arrow (our friends') without pride."

From then on he divides his life story into different aspects, instead of trying to carry the different threads together in chronological order. Under "Intellectual Life" he tells of the pleasant family-like faculty life presided over by President Angel and his gracious wife. To Ann Arbor in those days came many men and women of great renown who enjoyed the hospitality of the Vaughan home and remained devoted friends through the later years. In "The Medical School" one sees clearly where his greatest interest and pride lay. He says, "If I am leaving a memorial to my life's work, it lies in the medical school." He became acting dean in 1887 and from that time devoted his strongest energies and deepest thought to assembling a medical faculty and research library, at that time second to none in the country. Of the latter he says, "A medical school without a good research library is like an automobile without gasoline. It will not go." He does not believe in the full time professor because "he is a myth and it is fortunate that this is true for if he existed he would be worthless." The growth of the school was a testimonial to his good judgment both as an administrator and a lobbyist in the legislature.

He particularly enjoyed his contact with the medical students, appreciated their friendship, kept open house for them, watched their later progress with great interest and took great pleasure in the success or renown that came to some of them in later years. In addition to his other duties he was actively engaged in the practice of medicine for twenty years. He was drawn into this partly because he could not refuse the calls of his friends and colleagues and partly because he needed his fees to augment his salary, which never more than half met his modest living expenses. He greatly enjoyed this because it brought him into contact with many people, gave him ample opportunity to study human psychology and made him many firm and lasting friends. Another phase of his busy life was his work as a medical expert and from this he derived many interesting experiences and was able to contribute some valuable knowledge gained through experimental work.

He was early drawn into the Spanish-American War and saw service in the Philippines, where he had a severe attack of yellow fever which necessitated his being sent home. He then served on the Typhoid Commission and in view of our present knowledge it seems incredible that such conscientious work should yield so little toward solving the question of etiology. In 1917 he and his five sons had commissions in the World War, where he had charge of the communicable diseases. At the end of this chapter he says, "There is no armistice between medicine and disease. The conflict will continue as long as man walks the earth and the victory will ultimately be won by death. If man ceases to strive for wisdom he will sink into ignorance to which there is no bottom. The wheels of evolution are never standing still; they are constantly moving; they may go backward or forward."

The last chapter is on "Old Age" and is a classic in itself. He says that when a man comes to old age he is either a fool or a philosopher, and in this discussion he proves his place in the latter class. Anyone will find much of interest and value in this chapter but it will be of the greatest profit to him who has passed middle age and feels the touch of the frost of the years upon his brow. To such a one it will bring comfort, reconciliation and the ability to grow old gracefully, and also to realize the compensations that years of accomplishment may bring. Of himself he says, "I can truly say that with old age, as far as I have experienced it, I am content. The pleasure of living has grown and indeed the fast revolving years have only increased my interest in my environment."

This autobiography, with its philosophic touch, modestly telling of accomplishments, honors and happiness such as rarely are combined in any one man's life, will be a source of real inspiration to the young medical man and of equal interest to his older colleague. To the legion of men and women who have been in contact with the medical school at Ann Arbor it will have especial significance for the detailed descriptions of events and men will open up many memories. After reading it any one will have the impression that he has become acquainted with, not only a great man but also

a man with a great capacity for deriving happiness along the way of life, a man with a great appreciation of the human touch in all of life's relationships (a characteristic that many modern medical men will do well to imitate) and a man who greatly appreciates the value and pleasure of friendship.

MARGARET WARWICK, M.D.

PRUNES OR PANCAKES. Alfred Owre. 121 pages. $0.50. Minneapolis: University of Minnesota Press, 1926.

This small, paper covered volume will have its chief interest in the fact that its author is the Dean of the School of Dentistry at the University of Minnesota. It is another example of an individual who thinks he has found the key to health in his own interpretation of diet.

The author advocates but two meals a day with less meat but a great deal of fresh fruit and cheese to supply the protein. He also advises the drinking of a large amount of water, especially before meals, and less sweets than are enjoyed in the ordinary diet lists. He discusses diets for children as well as adults and pregnant women and gives sample menus with recipes and appended tables showing the caloric values of average helpings of the more common foods. He dismisses the popular subject of reducing by saying that anyone following his rules for eating will have no need to reduce. He also takes up the philosophy of diets, diet and the teeth and diets to prevent constipation.

The book is intended for the lay reader and holds little of interest for the physician. It suffers throughout by lack of clarity of style.

MARGARET WARWICK, M.D.

LIFE INSURANCE MEDICINE. A Study of Some of its Problems and Their Relation to Clinical Medicine by Members of the Medical Department of the New England Mutual Life Insurance Company. Volume 1. Boston: New England Mutual Life Insurance Co., 1926.

This book is the outcome of the study of the mass of statistics of insurance medicine. It tells us in what lines of medicine we have advanced and where we are stationary. It should be especially valuable to physicians doing public health or research work and to those examining the report of life insurance examinations.

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COUNTY SOCIETY ROSTER

BLUE EARTH COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of each month.
Annual meeting, last Monday in December.

President
Arnold, James E. ..... Mapleton

Secretary
Stillwell, W. C. ..... Mankato

Andrews, J. W. ..... Mankato
Andrews, R. N. ..... Mankato
Arnold, James E. ..... Mapleton
Benham, E. W. ..... Mankato
Black, Wm. ..... Mankato
Bomberger, C. B. ..... Mapleton
Cosgriff, J. A. ..... North Mankato
Dahl, G. A. ..... Mankato
Denman, A. V. ..... Mankato
Edwards, Ralph T. ..... Elysian
Franchere, F. W. ..... Lake Crystal
Fugina, George R. ..... Mankato
Holbrook, J. S. ..... Mankato
Holman, C. J. ..... Mankato
Howard, M. I. ..... Mankato
Juliar, R. O. ..... St. Clair
Kelly, Thomas C. ..... Mankato
Kemp, A. F. ..... Mankato
Liedloff, A. G. ..... Mankato
Lloyd, H. J. ..... Mankato
McAdory, R. J. ..... Mankato
Macbeth, J. L. ..... St. Clair
Miller, V. I. ..... Mankato
O'Connor, Patrick H. ..... Amboy
Osborn, Lida ..... Mankato
Schield, E. L. ..... Mankato
Schlesselman, J. T. ..... Mankato
Schmidt, P. A. ..... Good Thunder
Sohmer, A. E. ..... Mankato
Stillwell, W. C. ..... Mankato
Wentworth, A. J. ..... Mankato

BLUE EARTH VALLEY MEDICAL SOCIETY

Faribault and Martin Counties.
Regular meetings, monthly.
Annual meeting, fourth Thursday in May.

President
McGroarity, J. J. ..... Easton

Secretary
Hunt, R. C. ..... Fairmont

Bailey, H. B. ..... Ceylon
Best, F. E. ..... Wells
Boysen, H. ..... Welcome
Butz, J. A. ..... Monterey
Chambers, W. C. ..... Blue Earth
Farrish, R. C. ..... Sherburn
Gardner, V. H. ..... Fairmont
Henderson, A. J. ..... Kiester
Holm, P. F. ..... Wells
Hunt, F. N. ..... Fairmont
Hunt, R. C. ..... Fairmont
Hunte, A. F. ..... Truman
Johnson, H. P. ..... Fairmont
Logan, F. W. ..... Blue Earth
Luedtke, G. H. ..... Fairmont
McGroarity, J. J. ..... Easton
Marken, M. H. ..... Fairmont
Mills, J. L. ..... Winnebago
Silvernail, F. ..... Elmore
Sybilrud, H. W. ..... Bricelyn

CAMP RELEASE DISTRICT MEDICAL SOCIETY

Yellow Medicine, Lac Qui Parle, Renville, Chippewa and Sibley Counties.
Regular meetings, quarterly.
Annual meeting, subject to call of president.

President
Passer, A. A. ..... Olivia

Secretary
Holmberg, L. J. ..... Canby

Adams, R. C. ..... Bird Island
Aldrich, F. H. ..... Belview
Bacon, R. S. ..... Montevideo
Bergh, L. N. ..... Montevideo
Brand, W. A. ..... Redwood Falls
Burns, M. A. ..... Milan
Clay, E. M. ..... Hutchinson
Cole, H. B. ..... Redwood Falls
Crandall, A. M. ..... Madison
Lee, Walter N. ..... Madison
Lima, Ludvig ..... Montevideo
Mee, P. H. ..... Osseo
Cress, E. E. ..... Boyd
Duncan, Henry ..... Marietta
Engelhart, P. C. ..... Wood Lake
Farrell, J. C. ..... Arlington
Flinn, B. P. ..... Redwood Falls
Flinn, T. E. ..... Redwood Falls
Flower, W. Z. ..... Minneapolis
Foshager, Henry T. ..... Clara City
Gaines, E. C. ..... Buffalo Lake
Guyer, L. G. ..... St. Paul
Hassett, Roger G. ..... Bird Island
Hauge, M. M. ..... Clarkfield
Holmberg, L. J. ..... Canby
Hovde, Rolf ..... Winthrop
Johnson, C. M. ..... Dawson
Johnson, H. M. ..... Dawson
Kaufman, A. J. ..... Franklin
Kilbride, J. S. ..... Canby
Mesker, G. H. ..... Olivia
Mitchell, A. B. ..... Hector
Nelson, M. S. ..... Granite Falls
Olson, W. P. ..... Gaylord
Orlob, W. M. ..... Renville
Passer, A. A. ..... Olivia
Paul, L. W. ..... Canby
Penhall, F. W. ..... Morton
Peterson, H. E. ..... Granite Falls
Puffer, F. L. ..... Bird Island
Sanderson, A. G. ..... Granite Falls
Sherman, H. T. ..... Franklin
Smith, L. G. ..... Montevideo
Stemsrud, A. A. ..... Dawson
Tangen, Geo. M. ..... Canby
Westby, Nels ..... Madison
Zimbeck, R. D. ..... Maynard

CENTRAL MINNESOTA DISTRICT MEDICAL SOCIETY

Mille Lacs, Sherburne, Isanti, Anoka and Kanabec Counties.
Regular meetings, November, February, July.
Annual meeting, July.

President
Swenson, Charles ..... Braham

Secretary
Cooney, H. C. ..... Princeton

Bossert, C. S. ..... Mora
Caley, G. R. ..... Princeton
Caine, A. T. ..... Anoka
Cooney, H. C. ..... Princeton
Gates, C. E. ..... Anoka
Hall, E. L. ..... Princeton
Hedenstrom, L. H. ..... Cambridge
Norrgard, H. T. ..... Milaca
Peterson, A. A. ..... Mora
Phelps, Alvah G. ..... Ogilvie
Roadman, I. M. ..... Ponsford
Roehlke, A. B. ..... Elk River
Shulean, Nellie S. ..... Cambridge
Stocking, Fred F. ..... Milaca
Swennes, O. S. ..... Wahkon
Swenson, Charles ..... Braham
Vik, Melvin ..... Onamia
Vrooman, F. E. ..... St. Francis

CHISAGO-PINE COUNTY MEDICAL SOCIETY

Regular meetings, quarterly
Annual meeting, May

President
Paulson, C. W. ..... North Branch

Secretary
Kelsey, C. G. ..... Hinckley

Bohling, B. S. ..... Sandstone
Callahan, F. F. ..... Pokegama
Dredge, H. P. ..... Sandstone
Hultkrans, R. E. ..... Rush City
Kelsey, C. G. ..... Hinckley
Paulson, C. W. ..... North Branch
Flom, A. O. ..... Chisago City
Freymiller, E. F. ..... Markville
Heagerty, W. B. ..... Faribault
Holmes, A. E. ..... Rush City
Stephan, E. L. ..... Hinckley
Stewart, R. I. ..... Lindstrom
Stratte, A. K. ..... Pine City
Sundberg, R. H. ..... Pokegama
Tilton, Albert J. ..... Alden
Zeien, Thos. ..... North Branch

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings, January, April, July and October.
Annual meeting, October.

President
Humphrey, E. W. ..... Moorhead

Secretary
Heimark, J. H. ..... Moorhead

Bergheim, M. C. ..... Hawley
Bottolfson, B. T. ..... Moorhead
Darrow, D. C. ..... Moorhead
Ellingson, A. R. ..... Detroit Lakes
Flancher, Leon H. ..... Lake Park
Gosslee, G. L. ..... Moorhead
Hagen, Olaf J. ..... Moorhead
Heimark, J. H. ..... Moorhead
Humphrey, E. W. ..... Moorhead
Larson, O. O. ..... Detroit Lakes
Pardee, Katherine ..... Northampton, Mass.
Rutledge, L. H. ..... Detroit Lakes
Scott, R. A. ..... Detroit Lakes
Simison, C. W. ..... Hawley
Thornby, H. J. ..... Moorhead
Thysell, F. A. ..... Moorhead
Winberg, O. K. ..... Lake Park

DODGE COUNTY MEDICAL SOCIETY

Regular meetings, January, May, September.
Annual meeting, third Wednesday in September.

President
Clifford, F. F.....West Concord
Secretary
Bigelow, C. E.....Dodge Center

Adams, Rollin T.....Mantorville
Bigelow, C. E.....Dodge Center
Clifford, F. F.....West Concord
Affeldt, Daniel E.....Kasson

Flores, O. T.....Dodge Center
Harrison, E. E.....West Concord
Smith, F. D.....Kasson

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.
Annual meeting, December

President
Gullixson, A.....Albert Lea
Secretary
Gamble, P. M.....Albert Lea

Branham, D. S.....Albert Lea
Burns, H. D.....Albert Lea

Butturff, C. R.....Freeborn
Calhoun, F. W.....Albert Lea
Folken, F. G.....Albert Lea
Freeman, J. P.....Albert Lea
Freligh, W. P.....Albert Lea
Gamble, J. W.....Albert Lea
Gamble, P. M.....Albert Lea
Gamble, R. M.....Albert Lea
Gullixson, A.....Albert Lea

Kaasa, L. J.....Albert Lea
Kamp, B. A.....Albert Lea
Kooiker, Herman J.....Albert Lea
Nannestad, J. R.....Albert Lea
Palmer, C. F.....Albert Lea
Palmer, W. L.....Albert Lea
Schultz, J. A.....Albert Lea
Vollum, E. O.....Albert Lea
Von Berg, J. P.....Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Annual meeting, first Tuesday in January

President
Anderson, S. H.....Red Wing
Secretary
Steffens, L. A.....Red Wing

Aanes, A. M.....Red Wing
Anderson, J. V.....Red Wing

Anderson, S. H.....Red Wing
Backe, Edmund.....Kenyon
Bjorgo, C. W.....Cannon Falls
Claydon, L. E.....Red Wing
Conley, Alvah A.....Cannon Falls
Cremer, M. H.....Red Wing
Johnson, A. E.....Red Wing

Jones, A. W.....Red Wing
Kretzschmar, Karl E.....Los Angeles, Calif.
McGuigan, H. T.....Red Wing
Sawyer, H. P.....Goodhue
Smith, M. W.....Red Wing
Steffens, L. A.....Red Wing

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday of each month.
Annual meeting, first Monday in January.

President
Maxeiner, Stanley R.....Minneapolis
Secretary
Hansen, Erling.....Minneapolis

Adair, F. L.....Minneapolis
Aling, C. P.....Minneapolis
Allen, H. W.....Minneapolis
Allison, R. G.....Minneapolis
Almquist, H. E.....Minneapolis
Altnow, Hugo O.....Minneapolis
Anderson, A. E.....Minneapolis
Anderson, Arnt G.....Minneapolis
Anderson, David D.....Minneapolis
Anderson, Edward D.....Minneapolis
Anderson, Ernest R.....Minneapolis
Anderson, Frank J.....Minneapolis
Anderson, Silas C.....Minneapolis
Annis, H. B.....Minneapolis
Arey, H. C.....Excelsior
Arvidson, C. G.....Minneapolis
Aune, Martin.....Minneapolis
Aurand, W. H.....Minneapolis
Aurness, P. A.....Minneapolis
Avery, J. Fowler.....Minneapolis

Baken, Melvin P.....Minneapolis
Baker, Alfred T.....Minneapolis
Baker, E. L.....Minneapolis
Baker, Looe.....Minneapolis
Bakke, O. H.....Minneapolis
Barron, Moses.....Minneapolis
Barton, E. R.....Minneapolis
Bass, G. W.....Minneapolis
Baxter, S. H.....Minneapolis
Beard, Archie H.....Minneapolis
Beard, R. O.....Minneapolis
Bedford, E. W.....Minneapolis
Bell, E. T.....Minneapolis
Bell, J. W., Sr.....Minneapolis
Benedict, E. E.....Minneapolis
Benjamin, A. E.....Minneapolis
Benn, F. G.....Minneapolis
Bessesen, A. N., Sr.....Minneapolis
Bessesen, A. N., Jr.....Minneapolis
Bessesen, Daniel H.....Minneapolis
Bessesen, W. A.....Minneapolis
Bishop, Chas. W.....Minneapolis
Bissell, F. S.....Minneapolis
Blake, Jas.....Hopkins
Blanton, Smiley.....Minneapolis
Blaustone, Henry H.....Minneapolis
Blumenthal, Jacob.....Minneapolis
Bockman, M. W. H.....Minneapolis
Booth, A. E.....Minneapolis
Boquist, E. T. W.....Minneapolis
Boquist, Harold S.....Minneapolis
Boreen, C. A.....Minneapolis
Bouman, H. A.....Minneapolis

Boynton, Ruth.....Minneapolis
Bracken, H. M.....Claremont, Calif.
Brooks, Chas. N.....Minneapolis
Brown, Edgar D.....Minneapolis
Brown, R. S.....Minneapolis
Bulkley, Kenneth.....Minneapolis
Burling, Temple.....Minneapolis
Butler, John.....Minneapolis
Byrnes, W. J.....Minneapolis

Cabot, George S.....Minneapolis
Cabot, V. S.....Minneapolis
Cady, L. H.....Minneapolis
Camp, W. E.....Minneapolis
Campbell, L. M.....Minneapolis
Campbell, Robert.....Minneapolis
Carlaw, C. M.....Minneapolis
Cheleen, S. J.....Minneapolis
Cherry, Chas. H.....Minneapolis
Chesley, A. J.....Minneapolis
Cirkler, A. A.....Minneapolis
Clark, H. S.....Minneapolis
Condit, W. H.....Minneapolis
Cook, Henry Wireman.....Minneapolis
Cooperman, H. O.....Minneapolis
Corbett, J. Frank.....Minneapolis
Cosman, E. O.....Minneapolis
Crafts, Leo M.....Minneapolis
Cranmer, Richard R.....Minneapolis
Creighton, Ralph H.....Minneapolis
Crume, Geo. P.....Minneapolis
Curtin, John F.....Minneapolis
Cutts, George.....Minneapolis

Dady, Elmer E.....Minneapolis
Dahl, Elmer O.....Minneapolis
Dahl, John A.....Minneapolis
Dahlstrom, A. W.....Minneapolis
Daniel, Donald H.....Minneapolis
Dart, Leslie O.....Minneapolis
Devereaux, T. G.....Wayzata
Dezell, Earl R.....Minneapolis
Deziel, G.....Minneapolis
Diehl, Harold S.....Minneapolis
Diessner, H. D.....Minneapolis
Disen, C. F.....Minneapolis
Dorge, Richard I.....Minneapolis
Doxey, G. L.....Minneapolis
Drake, C. R.....Minneapolis
Dreisbach, N.....Minneapolis
Dunlap, E. H.....Minneapolis
Dunn, Geo. R.....Minneapolis
Dunn, Louis.....Minneapolis
Dunsmoor, F. A.....Minneapolis
Dutton, C. E.....Minneapolis
Dworsky, Samuel D.....Minneapolis

Ehrenberg, C. J.....Minneapolis
Eisenstadt, David H.....Minneapolis
Eitel, Geo. D.....Minneapolis

Eitel, G. G.....Minneapolis
Ellison, David E.....Minneapolis
Erb, F. A.....Minneapolis
Erdmann, C. A.....Minneapolis
Ericson, J. G.....Minneapolis
Everlof, J. L.....Minneapolis

Fansler, W. A.....Minneapolis
Farr, R. E.....Minneapolis
Feeney, John M.....Minneapolis
Fink, Walter H.....Minneapolis
Fischer, G.....Minneapolis
Fjeldstad, C. Alford.....Minneapolis
Fleming, A. S.....Minneapolis
Flocken, Chas. F.....Minneapolis
Fowler, L. H.....Minneapolis
Fox, John M.....Minneapolis
Franzen, H. G.....Minneapolis
Friedell, A.....Minneapolis
Frudenfeld, H. H.....Minneapolis

Gammell, J. H.....Minneapolis
Garand, J. H.....Dayton
Gardner, Edwin L.....Minneapolis
Geist, Emil S.....Minneapolis
Giessler, Paul W.....Minneapolis
Gingold, Benjamin A.....Minneapoils
Goldberg, Isadore M.....Minneapolis
Gordon, Geo. J.....Minneapolis
Gosin, D. F.....Minneapolis
Grave, Floyd.....Minneapolis
Green, E. K.....Minneapolis
Greene, W. P.....Minneapolis
Greisheimer, Esther M.....Minneapolis
Gunderson, Harley J.....Minneapolis
Gunderson, Nels A.....Minneapolis

Hacking Frank H.....Minneapolis
Hagen, G. L.....Minneapolis
Haggard, George D.....Minneapolis
Hall, J. M.....Minneapolis
Hall, S. S.....Minneapolis
Hallberg, C. A.....Minneapolis
Hamel, Arnold L.....Minneapolis
Hamilton, A. S.....Minneapolis
Hamlin, George B.....Minneapolis
Hammond, A. J.....Minneapolis
Hansen, Elmer H.....Minneapolis
Hansen, Erling.....Minneapolis
Hansen, Olga S.....Minneapolis
Hanson, H. J.....Minneapolis
Hanson, H. V.....Minneapolis
Hare, E. R.....Minneapolis
Harrington, C. D.....Minneapolis
Harrington, F. E.....Minneapolis
Hartzell, Thos. B.....Minneapolis
Hastings, D. R.....Minneapolis
Haverfield, Addie R.....Minneapolis
Hayes, J. M.....Minneapolis
Head, G. D.....Minneapolis

Hearn, Wm. O.....Minneapolis
Hedback, A. E.....Minneapolis
Heim, Russell R.....Minneapolis
Helk, H. H.....Minneapolis
Hendrickson, J. F.....Minneapolis
Henry, C. E.....Minneapolis
Henry, Myron O.....Minneapolis
Herbst, Wm. P.....Minneapolis
Herman, Arthur L.....Minneapolis
Hiebert, J. P.....Minneapolis
Higbee, Paul A.....Minneapolis
Hill, Eleanor J.....Minneapolis
Hirschfelder, A. D.....Minneapolis
Hirschfield, F. R.....Minneapolis
Hoaglund, A. W.....Minneapolis
Hobbs, C. A.....Minneapolis
Hodge, S. V.....Minneapolis
Hoiland, A. S.....Minneapolis
Holen, T.....Minneapolis
Holl, P. M.....Minneapolis
Holm, Geo. A.....Minneapolis
Holt, W. B.....Minneapolis
Howard, William H.....Minneapolis
Huenekens, E. J.....Minneapolis
Hughes, Louis D.....Minneapolis
Hutchinson, Chas. J.....Minneapolis
Hynes, James.....Minneapolis
Hynes, John E.....Minneapolis

Ikeda, Kano.....Minneapolis
Irvine, H. G.....Minneapolis

Jackson, C. M.....Minneapolis
Jennings, Mary H.....Minneapolis
Jensen, Harry.....Minneapolis
Jensen, Louis C.....Minneapolis
Jensen, M. J.....Minneapolis
Johnson, A. E.....Minneapolis
Johnson, A. Elof.....Minneapolis
Johnson, James A.....Minneapolis
Johnson, Julius.....Minneapolis
Johnson, Nimrod A.....Minneapolis
Johnson, Odin J.....Minneapolis
Johnson, R. A.....Minneapolis
Johnson, Selmer M.....Minneapolis
Jones, G. M.....Minneapolis
Jones, H. W.....Minneapolis
Jones, W. A.....Minneapolis
Josewich, Alexander.....Minneapolis

Kennedy, C. C.....Minneapolis
Kennedy, Jane F.....Minneapolis
Kennedy, R. Roy.....Minneapolis
Kibbe, O. A.....Minneapolis
Kimball, H. H.....Minneapolis
King, E. A.....Minneapolis
King, W. R.....Minneapolis
Kinsella, Thomas J.....Oak Terrace
Kistler, C. M.....Minneapolis
Kittelson, Olaf.....Minneapolis
Knight, H. L.....Minneapolis
Knight, Ralph T.....Minneapolis
Knight, Ray R.....Minneapolis
Kohler, G. A.....Minneapolis
Koller, Herman M.....Minneapolis
Koller, L. R.....Minneapolis
Kremer, Walter J.....Minneapolis
Kriedt, Daniel.....Minneapolis
Kucera, Frank J.....Hopkins
Kucera, Wm. J.....Minneapolis
Kusske, A. L.....New Ulm

Lajoie, John M.....Minneapolis
Lapierre, A. P.....Minneapolis
Lapierre, C. A.....Minneapolis
Laurent, A. A.....Minneapolis
LaVake, R. T.....Minneapolis
Law, A. A.....Minneapolis
Leavitt, H. H.....Minneapolis
Lebowske, Jos. A.....Minneapolis
Lee, H. M.....Minneapolis
Leland, M. N.....Minneapolis
Lemstrom, Jarl.....Minneapolis
Leonard, L. J.....Minneapolis
Lind, C. J.....Minneapolis
Lindquist, R. H.....Minneapolis
Linner, H. P.....Minneapolis
Lippman, Hyman S.....Minneapolis
List, Walter F.....Minneapolis
Litchfield, John T.....Minneapolis
Litzenberg, J. C.....Minneapolis
Logefeil, Rudolph C.....Minneapolis
Loomis, E. A.....Minneapolis
Lundgren, A. C.....Minneapolis
Lynch, M. J.....Minneapolis
Lyng, John A.....Minneapolis
Lyon, E. P.....Minneapolis
Lyon, J. D.....Minneapolis
Lysne, Henry.....Minneapolis

McCarthy, Donald.....Minneapolis
McCartney, James S.....Minneapolis
McDaniel, Orianna.....Minneapolis
McEachran, A.....Minneapolis
McFarland, A. H.....Minneapolis
McGandy, R. F.....Minneapolis
McGeary, Geo. E.....Minneapolis
McIntyre, George.....Minneapolis
McKinlay, C. A.....Minneapolis
McKinley, J. C.....Minneapolis
McKinney, F. S.....Minneapolis
McPheeters, H. O.....Minneapolis
MacDonald, A. E.....Minneapolis
MacDonald, D. A.....Minneapolis
MacDonald, Irving C.....Minneapolis
Mach, Frank B.....Minneapolis
Macnie, John S.....Minneapolis
Maland, C. O.....Minneapolis
Mann, A. T.....Minneapolis
Marclay, W. J.....Minneapolis
Mariette, Ernest.....Oak Terrace
Mark, D. B.....Minneapolis
Matthews, Justus.....Minneapolis
Maxeiner, Stanley R.....Minneapolis
May, W. H.....Minneapolis
Mead, Marion A.....Minneapolis
Merkert, Charles E.....Minneapolis
Merkert, G. L.....Minneapolis
Meyer, E. L.....Minneapolis
Michael, J. C.....Minneapolis
Michelson, H. E.....Minneapolis
Miller, F. C.....Minneapolis
Moir, Wm. W.....Minneapolis
Monahan, R. H.....Minneapolis
Moorhead, M. B.....Minneapolis
Moren, Edwin.....Minneapolis
Morrison, A. W.....Minneapolis
Murphy, Ignatius.....Minneapolis
Myers, J. A.....Minneapolis

Nathanson, M. H.....Minneapolis
Nelson, C. P.....Minneapolis
Nelson, H. S.....Minneapolis
Nelson, O. E.....Minneapolis
Newhart, Horace.....Minneapolis
Nippert, L. A.....Minneapolis
Nootnagel, C. F.....Minneapolis
Noran, A. N.....Minneapolis
Nordin, G. T.....Minneapolis
Nordland, Martin.....Minneapolis
Noth, H. W.....Minneapolis

O'Donnell, J. E.....Minneapolis
Oberg, C. M.....Minneapolis
Olson, F. A.....Minneapolis
Olson, G. M.....Minneapolis
Olson, Olaf A.....Minneapolis
Olson, R. G.....Minneapolis
Owre, Oscar.....Minneapolis

Parks, A. H.....Minneapolis
Patterson, W. E.....Minneapolis
Paulsen, E. L.....Minneapolis
Pearce, N. O.....Minneapolis
Pederson, Harold.....Minneapolis
Pederson, R. M.....Minneapolis
Peppard, T. A.....Minneapolis
Perry, Ralph St. J.....Minneapolis
Peters, R. M.....Minneapolis
Petersen, J. R.....Minneapolis
Petersen, Thorvald.....Minneapolis
Peterson, O. H.....Minneapolis
Peterson, Willard C.....Minneapolis
Pettit, C. W.....Minneapolis
Phelps, Kenneth A.....Minneapoils
Platou, E. S.....Minneapolis
Poehler, F. T.....Minneapolis
Polzak, Jacob A.....Minneapolis
Poppe, Fred H.....Minneapolis
Pratt, Fred J.....Minneapolis
Pratt, J. A.....Minneapolis
Preine, I. A.....Minneapolis
Prim, J. A.....Minneapolis
Proshek, Charles E.....Minneapolis

Quinby, Thomas F.....Minneapolis
Quist, H. W.....Minneapolis

Reed, Chas. A.....Minneapolis
Rees, S. P.....Minneapolis
Regnier, E. A.....Minneapolis
Reynolds, J. S.....Minneapolis
Richdorf, L. F.....Minneapolis
Rishmiller, J. H.....Minneapolis
Rizer, R. I.....Minneapolis
Roan, Carl M.....Minneapolis
Robb, Edwin F.....Minneapolis
Roberts, Thos. S.....Minneapolis
Roberts, W. B.....Minneapolis
Robitshek, E. C.....Minneapolis
Rochford, W. E.....Minneapolis
Rodda, F. C.....Minneapolis
Rodgers, C. L.....Minneapolis
Rosen, S.....Minneapolis
Rosenberg, Maurice N.....Minneapolis
Rosenwald, R. M.....Minneapolis
Rowe, Paul H.....Minneapolis
Rowe, W. H.....Minneapolis
Rudell, Gustave.....Minneapolis

Salt, C. G.....Minneapolis
Sawatzky, Wm. A.....Minneapolis
Schaaf, H. K.....Minneapolis
Schefcik, J. F.....Minneapolis
Scheldrup, N. H.....Minneapolis
Schlutz, Frederic W.....Minneapolis
Schmitt, A. F.....Minneapolis
Schmitt, S. C.....Minneapolis
Schneider, J. P.....Minneapolis
Schussler, Otto F.....Minneapolis
Schwartz, Virgil J.....Minneapolis
Schwyzer, Gustav.....Minneapolis
Scott, F. H.....Minneapolis
Seashore, Gilbert.....Minneapolis
Seham, Max.....Minneapolis
Selleseth, Iver.....Minneapolis
Simons, Jalmar.....Minneapolis
Simpson, E. D.....Minneapolis
Simpson, J. D.....Minneapolis
Siperstein, D. M.....Minneapolis
Sivertsen, Ivar.....Minneapolis
Slocumb, Maude S.....Minneapolis
Smith, A. M.....Minneapolis
Smith, Arthur E.....Minneapolis
Smith, Homer R.....Minneapolis
Smith, Norman M.....Minneapolis
Soderlind, A.....Minneapolis
Solhaug, S. B.....Minneapolis
Somerfield, H. A.....Minneapolis
Spratt, C. N.....Minneapolis
Stevenson, Frank W.....Minneapolis
Stewart, C. A.....Minneapolis
Stomel, Joseph.....Minneapolis
Strachauer, A. C.....Minneapolis
Strout, E. S.....Minneapolis
Strout, G. Elmer.....Minneapolis
Sturre, J. R.....Minneapolis
Sundt, M.....Minneapolis
Swanson, Roy E.....Minneapolis
Sweetser, H. B., Sr.....Minneapolis
Sweetser, H. B., Jr.....Minneapolis
Sweetser, Theodore.....Minneapolis
Sweitzer, S. E.....Minneapolis

Taft, John O.....Minneapolis
Taft, Walter L.....Minneapolis
Tanner, A. C.....Minneapolis
Taylor, Rood.....Minneapolis
Tennyson, Theo.....Minneapolis
Ternstrom, O. H.....Minneapolis
Thomas, Geo. E.....Minneapolis
Thomas, Geo. H.....Minneapolis
Thomas, Gilbert J.....Minneapolis
Thompson, H. H.....Minneapolis
Tingdale, A. C.....Minneapolis
Tunstead, Hugh J.....Minneapolis
Turnacliff, D. D.....Minneapolis
Tyrrell, C. C.....Minneapolis

Ude, Walter H.....Minneapolis
Ulrich, Henry L.....Minneapolis
Undine, Clyde A.....Minneapolis

Voyer, Emile O.....Minneapolis

Waldron, Carl W.....Minneapolis
Wanous, E. Z.....Minneapolis
Ward, A. W.....Minneapolis
Ward, Percy A.....Minneapolis
Warham, T. T.....Minneapolis
Watson, J. A.....Minneapolis
Webb, R. C.....Minneapolis
Weisman, S. A.....Minneapolis
Welles, H. J.....Minneapolis
Wethall, A. G.....Minneapolis
Wetherby, Macnider.....Minneapolis
Weum, T. Wm.....Minneapolis
Whetstone, Mary S.....Minneapolis
White, S. Marx.....Minneapolis
Widen, W. F.....Minneapolis
Wiese, H. F. B.....Minneapolis
Wilcox, Archa E.....Minneapolis
Wilcox, M. Russell.....Minneapolis
Willcutt, Clarence.....Minneapolis
Williams, H. L.....Minneapolis
Williams, Robert.....Minneapolis
Witham, C. A.....Minneapolis
Wittich, F. W.....Minneapolis
Wohlrabe, A. A.....Minneapolis
Wood, Douglas F.....Minneapolis
Woodworth, Elizabeth.....Minneapolis
Wright, C. B.....Minneapolis
Wright, Charles D'a.....Minneapolis
Wright, Franklin R.....Minneapolis
Wynne, H. M. N.....Minneapolis

Yoerg, O. W.....Minneapolis

Zaworski, E. A.....Minneapolis
Zierold, A. A.....Minneapolis

HOUSTON-FILLMORE COUNTY MEDICAL SOCIETY

Regular meetings, May, August and October

Annual meeting October

President
Christianson, H. W.....Wykoff
Secretary
Helland, J. W.....Spring Grove

Anderson, Norman E.....Harmony
Belote, G. B.....Caledonia
Browning, W. E.....Caledonia
Christianson, H. W.....Wykoff
Davis, I. Grant.....Rushford
Drake, F. A.....Lanesboro
Eby, C. B.....Spring Valley
Grinnell, W. B.....Preston
Helland, G. M.....Spring Grove
Helland, J. W.....Spring Grove
Kierland, P. E.....Alexandria
Lannin, J. C.....Mabel
Nass, H. A.....Mabel
Onsgard, C. K.....Halstad
Onsgard, L. K.....Houston
Palmer, R. N.....Lanesboro
Rhines, D. C.....Caledonia
Sather, E. R.....Alexandria
Tierney, C. M.....Granger
Utley, J. D.....Montrose, Calif.
Williams, R. V.....Rushford
Wilson, R. H.....Harmony

KANDIYOHI-SWIFT COUNTY MEDICAL SOCIETY

Regular meetings, at call of President.

Annual meeting, January.

President
Fiksdal, M. J.....Willmar
Secretary
Scofield, C. L.....Benson

Branton, A. F.....Willmar
Branton, B. J.....Willmar
Daignault, Oscar.....Benson
Davison, P. C.....Willmar
French, H. S.....New London
Fiksdal, M. J.....Willmar
Frost, E. H.....Willmar
Hodapp, R. J.....Willmar
Jacobs, Jno. C.....Willmar
Johnson, Hans.....Kerkhoven
Kaufman, Wm. C.....Appleton
Little, D. W.....Appleton
Rains, J. M.....Willmar
Scofield, C. L.....Benson

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, at call.

Annual meeting, November.

President
Hoidale, A. D.....Tracy
Secretary
Workman, H. M.....Tracy

Akester, Ward.....Marshall
Bossingham, O. N.....Lake Benton
Chorest, J. C. R.....Marshall
Engh, Sigfred.....Cottonwood
Ford, Burton C.....Marshall
Germo, Chas.....Balaton
Gray, F. D.....Marshall
Hermanson, Peter E.....Ivanhoe
Hoidale, A. D.....Tracy
Jacquot, G. L.....Tyler
Jensen, J. C.....Hendricks
Persons, C. E.....Marshall
Pearson, William T.....Russell
Robertson, J. B.....Cottonwood
Sanderson, E. T.....Minneota
Thordarson, Theo.....Minneota
Vadheim, A. L.....Tyler
Valentine, W. H.....Tracy
Workman, H. M.....Tracy
Workman, W. G.....Tracy

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, January, March, May, October

Annual meeting, May.

President
Schmidt, W. R.....Glencoe
Secretary
Langhoff, A. H.....Glencoe

Axilrod, D. L.....Hutchinson
Clement, J. B.....Lester Prairie
Holm, H. H.....Glencoe
Jenson, A. H.....Hutchinson
Klima, W. W.....Stewart
Kohler, F. G.....Minneapolis
Langhoff, A. H.....Glencoe
Sahr, W. G.....Hutchinson
Schmidt, W. R.....Glencoe
Scholpp, O. W.....Hutchinson
Sheppard, Fred.....Hutchinson
Sheppard, F. E.....Hutchinson
Trutna, Thos. J.....Silver Lake
Weissgerber, L. A.....Brownton

MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, May, August, October

Annual meeting, December

President
Brigham, Frank.....Watkins
Secretary
Danielson, K. A.....Litchfield

Brigham, Frank.....Watkins
Danielson, K. A.....Litchfield
Dulude, S. S.....Dassel
Lyman, F. V.....Grove City
Peterson, Alfred.....Dassel
Cutts, G. A. C.....Litchfield
Robertson, A. W.....Litchfield
Robertson, W. P.....Litchfield
Wilmot, H. E.....Litchfield

MOWER COUNTY MEDICAL SOCIETY

Regular meetings, last Thursday of each month.

Annual meeting, last Thursday in November.

President
Allen, Chas. C.....Austin
Secretary
Morrow, James J.....Austin

Allen, A. W.....Austin
Allen, Chas. C.....Austin
Cobb, Willis F.....Lyle
Coleman, F. B.....Austin
Davis, F. W.....Adams
Fisch, Herbert W.....Austin
Grise, W. B.....Austin
Hegge, C. A.....Austin
Hegge, O. H.....Austin
Henslin, A. E.....LeRoy
Hertel, G. E.....Austin
Leck, Clifford C.....Austin
Lewis, Charles F.....Austin
Lommen, P. A.....Austin
McKenna, J. K.....Austin
Melzer, G. R.....Lyle
Mitchell, R. S.....Grand Meadow
Morrow, James J.....Austin
Morse, M. P.....LeRoy
Rebman, E. C.....Austin
Robertson, P. A.....Austin
Sheedy, Chester L.....Austin
Torkelson, P. T.....Lyle

NICOLLET-LE SUEUR MEDICAL SOCIETY

Regular meetings, June, September, and December.

Annual meeting, December

President
Freeman, G. H.....St. Peter
Secretary
Daniels, J. W.....St. Peter

Aitkens, H. B.....Le Sueur Center
Baskett, Geo. T.....Retreat, Pa.
Baskett, Olive T.....Retreat, Pa.
Covell, W. W.....St. Peter
Daniels, J. W.....St. Peter
Dodge, F. A.....Le Sueur
Eirley, Clara S. Y.....Mt. Pleasant, Ia.
Ericson, Swan.....Le Sueur
Freeman, G. H.....St. Peter
Holtan, Theodore.....Waterville
LeClerc, J. E.....Le Sueur
McKeon, J. O.....Montgomery
Meilicke, W. A.....Nicollet
Norris, J. F.....St. Peter
Smith, B. F.....St. Peter
Strathern, F. P.....St. Peter

OLMSTED COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday in April, June, September and December
Annual meeting, December.

President

Linton, W. B.—Rochester

Secretary

Piper, M. C.—Rochester

Adams, S. Franklin—Rochester
Adson, A. W.—Rochester
Allen, Edgar V.—Rochester
Allen, Roy W.—Rochester
Allen, W. A.—Rochester
Alvarez, Walter C.—Rochester
Amberg, Samuel—Rochester
Anderson, C. M.—Rochester
Anderson, E. W.—Rochester
Anderson, Gilbert C.—Rochester
Anderson, Mark J.—Rochester
Asbury, J. T.—Rochester
Aurelius, J. Richards—Rochester
Balfour, D. C.—Rochester
Bannick, Edwin G.—Rochester
Barborka, C. J.—Rochester
Bargen, J. Arnold—Rochester
Barker, Nelson W.—Rochester
Barnes, A. R.—Rochester
Baumgartner, Conrad J.—Rochester
Baxter, Geoffrey H.—Rochester
Bayha, Carl H.—Rochester
Beach, Watson—Rochester
Benedict, W. L.—Rochester
Bergen, Ralph D.—Rochester
Berkman, D. M.—Rochester
Blackford, Launcelot M.—Rochester
Bliss, John H.—Rochester
Bodine, Marc W.—Rochester
Bonta, M. B.—Rochester
Boothby, W. M.—Rochester
Borgeson, Egbert J.—Rochester
Bowing, H. H.—Rochester
Bowles, John H.—Rochester
Braasch, Wm. F.—Rochester
Brading, Edward T.—Rochester
Bratrude, E. J.—Rochester
Brockbank, Thos. Wm.—Rochester
Broders, A. C.—Rochester
Brown, A. E.—Rochester
Brown, Felix M.—Rochester
Brown, G. E.—Rochester
Brown, P. W.—Rochester
Bueermann, Winifred H.—Rochester
Buie, L. A.—Rochester
Bumpus, H. C.—Rochester
Busby, James L.—Rochester
Caylor, Harold D.—Rochester
Chambers, Stanley O.—Philadelphia, Pa.
Chumley, Charles L.—Rochester
Coffey, Jay R.—Rochester
Comfort, Mandred W.—Rochester
Conner, H. M.—Rochester
Corbeille, Catherine—Rochester
Counseller, Virgil S.—Rochester
Craig, Wm. McK.—Rochester
Crane, Wm. W., Jr.—Rochester
Crenshaw, J. L.—Rochester
Crewe, J. E.—Rochester
Davis, Austin C.—Rochester
Davis, John D.—Rochester
Decker, Walter J.—Rochester
Desjardins, Arthur U.—Rochester
Dixon, Claude F.—Rochester
Dixon, Robert K.—Rochester
Dobson, Herbert V.—Rochester
Dolder, F. C.—Eyota
Doyle, J. B.—Rochester
Drips, D. G.—Rochester
Dunlap, H. F.—Rochester
Dunn, Halbert L.—Baltimore, Md.
Eskew, Don C.—Rochester
Etheredge, Shuler H.—Rochester
Eusterman, G. B.—Rochester
Evarts, Arrah B.—Rochester
Faust, Louis S.—Rochester
Fawcett, C. E.—Stewartville
Fehland, Harold R.—Rochester
Figi, F. A.—Rochester
Finney, W. P., Jr.—Rochester
Fishback, Frederick C.—Rochester
Flothow, Paul G.—Rochester
Ford, Frances A.—Rochester
Fortin, Harry J.—Rochester
Frederickson, Clyde H.—Rochester
Gaarde, F. W.—Rochester
Gay, James G.—Rochester
Giffin, H. Z.—Rochester
Gleason, Notery A.—Rochester
Goeckerman, W. H.—Rochester
Gorder, Arne C.—Rochester
Green, George F.—Rochester
Greene, Carl H.—Rochester
Greene, Earle I.—Rochester
Greenlee, Daniel P.—Rochester
Habein, Harold C.—Rochester
Hager, Benjamin H.—Rochester
Haines, S. F.—Rochester
Haldeman, Keene O.—Rochester
Hallenbeck, D. F.—Rochester
Hamrick, Robert A.—Rochester
Hand, John R.—Rochester
Hane, Richard L.—Rochester
Hanlon, Frank R.—Rochester
Hargis, Estes H.—Rochester
Harrington, Ethel R.—Rochester
Harrington, S. W.—Rochester
Harshbarger, Isaac L.—Rochester
Hartman, H. R.—Rochester
Hauser, Emil D.—Rochester
Havens, Fred Z.—Rochester
Heck, Frank J.—Rochester
Heetderks, D. R.—Rochester
Helmholz, H. F.—Rochester
Hempstead, B. E.—Rochester
Hench, Philip S.—Rochester
Henderson, Earl F.—Rochester
Henderson, M. S.—Rochester
Herrmann, S. F.—Rochester
Heyerdale, O. C.—Rochester
Holloway, Jackson K.—Rochester
Horton, Bayard T.—Rochester
Horwitz, Alec—Rochester
Huffman, Lester D.—Rochester
Hufford, Alvin R.—Rochester
Hunt, V. C.—Rochester
Jacobs, Minerd F.—Rochester
Jepson, P. N.—Boston, Mass.
Johnson, Walter R.—Rochester
Jones, H. T.—Rochester
Jones, Robert D.—Rochester
Jordan, Elverse M.—Rochester
Jordan, Ferdinand M.—Rochester
Joyce, G. T.—Rochester
Judd, E. S.—Rochester
Keith, N. M.—Rochester
Kennedy, Roger L. J.—Rochester
Kepler, E. J.—Rochester
Kepler, Helen M.—Rochester
Kernohan, James W.—Rochester
Kestel, John L.—Rochester
Kilbourne, A. F.—Rochester
Killins, Wendell A.—Rochester
Kleinheksel, John L.—Rochester
Korth, Zeno N.—Rochester
Lapp, Victor R.—Rochester
Latchford, James K.—Rochester
Leddy, Eugene T.—Rochester
Lemon, W. S.—Rochester
Lillie, H. I.—Rochester
Lillie, W. I.—Rochester
Lindsey, Maude L.—Rochester
Linton, W. B.—Rochester
Logan, A. H.—Rochester
Luden, Georgine—Rochester
Lundy, John S.—Rochester
McKaig, Carle B.—Pine Island
McKeithen, A. M.—Rochester
McNaugher, William M.—Rochester
McQuiggan, Mark R.—Rochester
McVicar, Chas. S.—Rochester
Magath, T. B.—Rochester
Martin, Clement L.—Rochester
Masson, D. M.—Rochester
Masson, J. C.—Rochester
May, James A.—Rochester
Mayo, C. H.—Rochester
Mayo, W. J.—Rochester
Maytum, Charles K.—Rochester
Meyerding, H. W.—Rochester
Mills, Ralph G.—Rochester
Moench, L. Mary—Rochester
Moersch, F. P.—Rochester
Moersch, H. J.—Rochester
Montgomery, Hamilton—Rochester
Moore, A. B.—Rochester
Morton, Chas. B.—Rochester
Mussey, R. D.—Rochester
Nagel, G. W.—Rochester
Nelson, Marque O.—Rochester
New, G. B.—Rochester
Nickel, Allen A. C.—Rochester
Nunn, Leslie L.—Eveleth
O'Leary, P. A.—Rochester
Ochsenhirt, Norman C.—Rochester
Offutt, Susan R.—Rochester
Ohlinger, L. B.—Rochester
Olson, Ernest A.—Pine Island
Omohundro, Miles P.—Rochester
Parker, H. L.—Rochester
Parker, J. William—Rochester
Parsons, Eloise—Rochester
Pemberton, J. deJ.—Rochester
Piper, M. C.—Rochester
Plankers, A. G.—Dubuque, Iowa
Plummer, H. S.—Rochester
Plummer, W. A.—Rochester
Pollock, L. W.—Rochester
Prangen, A. D.—Rochester
Prickman, Louis E.—Rochester
Pugliese, Frank M.—Rochester
Quale, Victor S.—Rochester
Radtke, H. P.—Rochester
Randall, Lawrence M.—Rochester
Rankin, F. W.—Rochester
Reddick, Charles E.—Rochester
Reid, J. Spence—Rochester
Rentschler, Calvin B.—Rochester
Rentschler, Edwin B.—Rochester
Rivers, A. B.—Rochester
Robertson, H. E.—Rochester
Rosenow, E. C.—Rochester
Rowntree, L. G.—Rochester
Rucker, Charles W.—Rochester
Sager, William W.—Rochester
Sanford, A. H.—Rochester
Schmitt, Earl O. G.—Rochester
Schulz, Irwin—Rochester
Shafter, Royce R.—Rochester
Sheldon, W. D.—Rochester
Shippey, Stuart H.—Rochester
Shugrue, John Joseph—Rochester
Simon, Harold E.—Rochester
Sistrunk, W. E.—Rochester
Smith, F. L.—Rochester
Smith, Harry L.—Rochester
Smith, Newton D.—Rochester
Snell, Albert M.—Rochester
Stacy, L. J.—Rochester
Stark, W. B.—Rochester
Stephens, Brooks P.—Rochester
Stephenson, Robert A.—Rochester
Steven, Geo.—Byron
Stinson, John W.—Rochester
Stuhler, Louis G.—Rochester
Sutherland, C. G.—Rochester
Swan, Theo. S.—Rochester
Synhorst, Alfred P.—Rochester
Thompson, H. L.—Rochester
Thompson, J. W., Jr.—Rochester
Viecelli, James D.—Rochester
Vinson, P. P.—Rochester
von Lackum, W. H.—Rochester
Wagener, H. P.—Rochester
Walters, H. W.—Rochester
Weir, J. F.—Rochester
Wellbrock, William L.—Rochester
Wheeler, Theodora—Rochester
White, Robert B.—Rochester
Whitten, Merritt B.—Rochester
Wickham, Mont. C.—Rochester
Wilder, R. M.—Rochester
Wilhelmj, Charles M.—Rochester
Wilkinson, Henry F.—Rochester
Williams, Henry L., Jr.—Rochester
Williams, Thomas B.—Rochester
Willius, F. A.—Rochester
Wilson, Louis B.—Rochester
Woltman, H. W.—Rochester
Wood, H. G.—Rochester
Yater, Wallace M.—Rochester
Ziegler, Lloyd H.—Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Otter Tail, Wilkin, Grant, and Douglas Counties
Regular meetings, second Wednesday in January, April, July, and October.
Annual meeting, second Wednesday in October.

President

Boysen, Peter—Pelican Rapids

Secretary

Batersmoen, Theo.—Pelican Rapids

Baker, A. C.—Fergus Falls
Boysen, Peter—Pelican Rapids
Brabec, F. J.—Perham
Broker, W. S.—Battle Lake
Burnap, W. L.—Fergus Falls
Cowing, P. G.—Evansville
Drought, W. W.—Fergus Falls
Esser, John—Perham

Estrem, C. O. ..... Fergus Falls
Freeborn, J. A. ..... Fergus Falls
Naegeli, Frank ..... Fergus Falls
Gilkinson, A. J. ..... Osakis
Goodson, Catherine M. ..... Retreat, Pa.
Hand, W. R. ..... Elbow Lake
Haskell, A. D. ..... Alexandria
Heiberg, E. A. ..... Fergus Falls
Kittelson, T. N. ..... Fergus Falls
Lee, W. A. ..... Fergus Falls
Leibold, H. H. ..... Parkers Prairie
Lewis, A. J. ..... Henning
Love, Fred A. ..... Carlos
Meckstroth, C. W. ..... Brandon
Meland, Ernest ..... Dalton
Meng, Eleanor L. ..... Fergus Falls
Meng, Wm. L. ..... Fergus Falls
Nelson, O. N. ..... Battle Lake
Otto, H. C. ..... Frazee
Parson, L. R. ..... Elbow Lake
Patterson, W. L. ..... Fergus Falls
Paulson, T. S. ..... Fergus Falls
Powers, F. W. ..... Barrett
Rimer, E. W. ..... Breckenridge
Sargeant, H. L. ..... Fergus Falls
Satersmoen, Theo. ..... Pelican Rapids
Sherping, O. Th. ..... Fergus Falls
Tanquist, E. J. ..... Alexandria
Thane, Benjamin ..... Breckenridge
Vail, James B. ..... Henning
Vigen, J. G. ..... Fergus Falls
Wray, W. E. ..... Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of month except June, July and August.
Annual meeting, last Monday of January.

President
Savage, F. J. ..... St. Paul

Secretary
Schulze, Albert G. ..... St. Paul

Abbott, J. S. ..... St. Paul
Abramovich, J. H. ..... St. Paul
Ahrens, A. E. ..... St. Paul
Ahrens, A. H. ..... St. Paul
Alberts, Max W. ..... St. Paul
Alden, J. F. ..... St. Paul
Aldes, Harry ..... St. Paul
Alexander, F. H. ..... St. Paul
Allen, Mason ..... St. Paul
Armstrong, J. M. ..... St. Paul
Arnquist, A. S. ..... St. Paul
Arouni, Khalil ..... St. Paul
Arzt, C. P. ..... St. Paul
Bacon, Donald K. ..... St. Paul
Bacon, Knox ..... San Diego, Calif.
Bacon, L. C. ..... St. Paul
Balcome, F. E. ..... St. Paul
Ball, C. R. ..... St. Paul
Barry, L. W. ..... St. Paul
Barsness, Nellie ..... St. Paul
Beadie, W. D. ..... Cannon Falls
Beals, Hugh ..... St. Paul
Bell, C. C. ..... St. Paul
Benepe, L. M. ..... St. Paul
Bennion, P. H. ..... St. Paul
Bentley, Norman P. ..... St. Paul
Berrisford, Paul D. ..... St. Paul
Binger, H. E. ..... St. Paul
Birnberg, T. L. ..... St. Paul
Bock, R. A. ..... St. Paul
Boeckmann, Eduard ..... St. Paul
Boeckmann, Egil ..... St. Paul
Bohland, E. H. ..... St. Paul
Bole, R. S. ..... St. Paul
Bolstad, H. C. ..... St. Paul
Borg, Joseph F. ..... St. Paul
Bouma, L. R. ..... St. Paul
Brand, G. D. ..... St. Paul
Bray, E. R. ..... St. Paul
Brimhall, J. B. ..... St. Paul
Brodie, Walter D. ..... St. Paul
Brooks, D. F. ..... St. Paul
Brooks, G. F. ..... St. Paul
Brown, Ed. I. ..... St. Paul
Brown, John C. ..... St. Paul
Brown, S. E. ..... St. Paul
Burch, F. E. ..... St. Paul
Burfiend, G. H. ..... St. Paul
Burns, F. W. ..... St. Paul
Burns, R. M. ..... St. Paul
Busher, H. ..... St. Paul
Caldwell, Jas. P. ..... St. Paul
Caldwell, Kenneth S. ..... St. Paul
Cameron, J. A. ..... St. Paul
Campbell, J. E. ..... South St. Paul
Cannon, Harry ..... St. Paul
Carman, C. L. ..... St. Paul
Carman, Paul I. ..... St. Paul
Carroll, Wm. C. ..... St. Paul
Carter, Fred G. ..... St. Paul
Cavanaugh, J. O. ..... St. Paul
Chatterton, C. C. ..... St. Paul
Christiansen, A. ..... St. Paul
Christison, J. T. ..... St. Paul
Cobb, S. G. ..... St. Paul
Colby, Woodard ..... St. Paul
Cole, Wallace W. ..... St. Paul
Collie, H. G. ..... St. Paul
Colvin, A. R. ..... St. Paul
Comstock, A. E. ..... St. Paul
Conner, W. H. ..... St. Paul
Connor, C. E. ..... St. Paul
Constans, Geo. M. ..... St. Paul
Cook, Paul B. ..... St. Paul
Countryman, Roger S. ..... St. Paul
Cowern, E. W. ..... North St. Paul
Critchfield, L. R. ..... St. Paul
Crump, J. W. ..... St. Paul
Culligan, J. M. ..... St. Paul
Dack, Lloyd G. ..... St. Paul
Darling, J. B. ..... St. Paul
Daugherty, E. B. ..... St. Paul
Daugherty, L. E. ..... St. Paul
Davis, Herbert ..... St. Paul
Davis, William ..... St. Paul
Dedolph, Karl ..... St. Paul
Derauf, B. I. ..... St. Paul
Dickson, Thos. H., Jr. ..... St. Paul
Dittman, Geo. C. ..... St. Paul
Dohm, A. J. ..... St. Paul
Donohue, P. F. ..... St. Paul
Drake, Carl B. ..... St. Paul
Dunn, J. N. ..... St. Paul
Dunne, Gerald P. ..... St. Paul
Earl, George A. ..... St. Paul
Earl, Robert O. ..... St. Paul
Edlund, G. ..... St. Paul
Ely, O. S. ..... South St. Paul
Emerson, E. C. ..... St. Paul
Endress, E. K. ..... St. Paul
Engberg, E. J. ..... St. Paul
Ernest, G. C. ..... St. Paul
Eshelby, E. C. ..... St. Paul
Fahey, E. W. ..... St. Paul
Ferguson, J. C. ..... St. Paul
Fesler, Harold H. ..... St. Paul
Flagstad, A. E. ..... St. Paul
Fogarty, Chas. W. ..... St. Paul
Foley, F. E. B. ..... St. Paul
Freeman, C. D. ..... St. Paul
Fulton, J. F. ..... St. Paul
Gager, E. C. ..... St. Paul
Garbrecht, Arthur ..... St. Paul
Gardiner, D. G. ..... St. Paul
Geer, Everett K. ..... St. Paul
Gehlen, J. N. ..... St. Paul
Geissinger, John D. ..... St. Paul
Geist, George A. ..... St. Paul
Ghent, C. Harry ..... St. Paul
Ghent, M. M. ..... St. Paul
Giere, E. O. ..... St. Paul
Gilfillan, J. S. ..... St. Paul
Ginsberg, Wm. ..... St. Paul
Goltz, E. V. ..... St. Paul
Gratzek, Thos. ..... St. Paul
Greene, Charles L. ..... St. Paul
Gruenhagen, Arnold P. ..... St. Paul
Hagaman, Geo. K. ..... St. Paul
Hall, A. R. ..... St. Paul
Halper, Philip ..... St. Paul
Hammes, E. M. ..... St. Paul
Hammond, J. F. ..... St. Paul
Harmon, G. E. ..... St. Paul
Hartley, E. C. ..... St. Paul
Hauser, V. P. ..... St. Paul
Hawkins, V. J. ..... St. Paul
Heath, A. C. ..... St. Paul
Heck, Wm. W. ..... St. Paul
Hedenstrom, F. G. ..... St. Paul
Hengstler, W. H. ..... St. Paul
Hensel, C. N. ..... St. Paul
Herrmann, Edgar T. ..... St. Paul
Hesselgrave, S. S. ..... St. Paul
Hilger, A. W. ..... St. Paul
Hilger, D. D. ..... St. Paul
Hilger, L. A. ..... St. Paul
Hochfilzer, J. J. ..... St. Paul
Hoff, Alfred ..... St. Paul
Hoff, Peder A. ..... St. Paul
Hoffman, Max H. ..... St. Paul
Holcomb, J. T. ..... St. Paul
Holcomb, O. W. ..... St. Paul
Howard, Merrill A. ..... St. Paul
Howard, W. S. ..... St. Paul
Hullsiek, Harold ..... St. Paul
Hultkrans, Joel C. ..... St. Paul
Hunt, H. E. ..... St. Paul
Ide, A. W. ..... St. Paul
Ingerson, C. A. ..... St. Paul
Johnson, Asa M. ..... St. Paul
Johnson, Hartland C. ..... St. Paul
Johnson, O. F. ..... St. Paul
Johnson, Ray G. ..... St. Paul
Johnson, T. H. ..... St. Paul
Jones, D. C. ..... St. Paul
Jones, E. M. ..... St. Paul
Kadesky, David ..... St. Paul
Kamman, Gordon R. ..... St. Paul
Kannary, E. L. ..... St. Paul
Kelly, John V. ..... St. Paul
Kelly, Paul H. ..... St. Paul
Kennedy, W. A. ..... St. Paul
Kenny, H. F. ..... St. Paul
Kesting, Herman ..... St. Paul
King, George L. ..... St. Paul
King, Z. P. ..... St. Paul
Kistler, A. S. ..... St. Paul
Klein, H. N. ..... St. Paul
Knauff, M. K. ..... St. Paul
Kvitrud, G. ..... Minneapolis
Langenderfer, F. V. ..... St. Paul
Larsen, C. L. ..... St. Paul
Larson, M. L. ..... St. Paul
Lax, Morris H. ..... St. Paul
Leahy, Bartholomew ..... St. Paul
Leavenworth, Richard O. ..... St. Paul
Leitch, Archibald ..... St. Paul
Lepak, John A. ..... St. Paul
Lerche, William ..... St. Paul
Lewis, J. B. ..... South St. Paul
Lewis, W. W. ..... St. Paul
Lick, C. Louis ..... St. Paul
Little, W. J. ..... St. Paul
Lowe, Earl R. ..... South St. Paul
Lund, Arthur E. ..... St. Paul
Lundholm, A. M. ..... St. Paul
McBeath, Ewing C. ..... St. Paul
McCarthy, W. R. ..... St. Paul
McClanahan, J. H. ..... White Bear
McClanahan, T. S. ..... White Bear
McCloud, C. N. ..... St. Paul
McKeon, Owen ..... St. Paul
McLaren, Jeanette M. ..... St. Paul
McNevin, C. F. ..... St. Paul
Martineau, J. L. ..... St. Paul
Meyerding, E. A. ..... St. Paul
Mitchell, Frederick ..... St. Paul
Mogilner, S. N. ..... St. Paul
Molander, H. A. ..... St. Paul
Moquin, Marie A. ..... St. Paul
Morrissey, F. B. ..... St. Paul
Mortenson, N. G. ..... St. Paul
Moskovitz, Selic ..... St. Paul
Moss, Myer N. ..... St. Paul
Moynihan, T. J. ..... St. Paul
Muller, R. Theo. ..... St. Paul
Murphy, E. F. ..... St. Paul
Myers, Thos. ..... St. Paul
Neher, F. H. ..... St. Paul
Nelson, L. A. ..... St. Paul
Nesbit, Harold T. ..... St. Paul
Nichols, A. E. ..... St. Paul
Nippert, H. T. ..... St. Paul
Nordin, C. G. ..... St. Paul
Norris, Edgar H. ..... St. Paul
Nye, Katherine A. ..... St. Paul
Nye, Lillian L. ..... St. Paul
O'Brien, H. J. ..... St. Paul
O'Connor, I. A. ..... St. Paul
O'Connor, J. P. ..... St. Paul
Oerting, Harry ..... St. Paul
Ogden, Warner ..... St. Paul
Ohage, Justus ..... St. Paul
Ohage, Justus, Jr. ..... St. Paul
Olson, Chas. A. ..... St. Paul
Ostergren, E. W. ..... St. Paul
Pearson, F. R. ..... St. Paul
Pedersen, A. H. ..... St. Paul
Penny, L. E. ..... St. Paul
Perry, C. G. ..... St. Paul
Peterson, V. N. ..... St. Paul
Plondke, F. J. ..... St. Paul
Prendergast, H. J. ..... St. Paul
Ramsey, W. R. ..... St. Paul
Richards, E. T. F. ..... St. Paul
Richardson, Harold E. ..... St. Paul
Riggs, C. E. ..... St. Paul
Ritchie, H. P. ..... St. Paul
Rogers, John T. ..... St. Paul
Rosenthal, Robert ..... St. Paul
Rothrock, J. L. ..... St. Paul
Rothschild, H. J. ..... St. Paul

Roy, Philemon....St. Paul
Ruhberg, George N....St. Paul
Rutherford, W. C....St. Paul
Ryan, John J....St. Paul
Ryan, Mark E....St. Paul
Satterlund, Victor....St. Paul
Savage, F. J....St. Paul
Schoch, R. B....St. Paul
Schuldt, F. C....St. Paul
Schulze, Albert G....St. Paul
Schwyzer, Arnold....St. Paul
Senkler, G. E....St. Paul
Setzer, H. J....St. Paul
Shannon, W. Roy....St. Paul
Shapere, A. D....St. Paul
Shellman, John L....St. Paul
Shillington, M. A....St. Paul
Shimonek, Anton....St. Paul
Simon, B. F....St. Paul
Simon, Geo. H....St. Paul
Skinner, H. O....St. Paul
Snyder, G. W....St. Paul
Sohlberg, Olof....St. Paul
Souster, B. B....St. Paul
Sprafka, J. M....St. Paul
Sterner, E. G....St. Paul
Sterner, O. W....St. Paul
Stevens, F. A....Lake Elmo
Stewart, Alexander....St. Paul
Stierle, Adolph, Jr....St. Paul
Stinnette, S. E....St. Paul
Stolpestad, H. L....St. Paul
Swanson, Edwin O....St. Paul
Swanson, John A....St. Paul
Sweeney, Arthur....St. Paul
Swendson, J. J....St. Paul
Taylor, H. L....St. Paul
Teisberg, C. B....St. Paul
Tiber, L. J....St. Paul
Tregilgas, H. R....South St. Paul
Tuttle, Thos. D....St. Paul
Van Slyke, Chas. A....St. Paul
Veirs, Dean....St. Paul
Veirs, Ruby S....St. Paul
Von der Weyer, Wm....St. Paul
Waas, Charles W....St. Paul
Wald, R. H....St. Paul
Walker, R. E....St. Paul
Wallinga, John H....St. Paul
Warner, E. F....St. Paul
Warnock, R. W....St. Paul
Warren, E. L....St. Paul
Warwick, Margaret....St. Paul
Welch, M. C....St. Paul
Wheeler, M. W....St. Paul
Whitacre, J. C....St. Paul
Whitcomb, Ed. H....St. Paul
White, J. S....St. Paul
Whitmore, F. W....St. Paul
Whitney, A. W....St. Paul
Williams, Clayton....St. Paul
Winnick, J. B....St. Paul
Wold, K. C....St. Paul
Wolfe, H. H....St. Paul
Ylvisaker, L. S....St. Paul
Zander, C. H....St. Paul
Zimmermann, H. B....St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Marshall, Polk, Roseau, Pennington, Red Lake, Norman and Mahnomen Counties.

Regular meetings, April, September, December.
Annual meeting, December

President
Morley, G. A....Crookston

Secretary
Oppegaard, M. O....Crookston

Adkins, C. M....Grygla
Anderson, J. K....Crookston
Anderson, W. S....Minneapolis
Bernard, B. C....Thief River Falls
Bertelson, O. L....Crookston
Biedermann, Jacob....Thief River Falls
Blegen, H. M....Warren
Borreson, Baldwin....Remer
Bowers, J. T....Thief River Falls
Bratrud, O. Edward....Warren
Bratrud, Theodor....Warren
Brown, Lyle L....Crookston
Dean, Arthur C....Crookston
Delmore, J. L....Roseau
Dunlop, Alex H....Crookston
Edstrom, Henry....Crookston
Erickson, J. L....Twin Valley
Fried, Louis A....Fosston
Froehlich, H. W....Thief River Falls
Griffin, P. J....Fertile
Henney, Wm. H....McIntosh
Hodgson, H. H....Crookston
Hollands, W. H....Fisher
Holmes, W. B....Ada
Holte, H....Crookston
Kahala, Arthur....Crookston
Kirk, G. P....East Grand Forks
Kjelland, J. S....East Ellsworth, Wis.
Larson, A. L....Fertile
Leitch, N. M....Hallock
Locken, O. E....Crookston
Mellby, O. F....Thief River Falls
Milan, M. Geo....Warren
Morley, G. A....Crookston
Nelson, H. E....Crookston
Nerad, Anton H....Argyle
Norman, J. F....Crookston
Ohnstad, J. L....McIntosh
Oppegaard, C. L....Crookston
Oppegaard, M. O....Crookston
Overend, K. V....Hallock
Roy, J. A....Red Lake Falls
Sather, Allen....Fosston
Shaleen, A. W....Hallock
Shedlov, A....Fosston
Shelland, J. T....Ada
Stratte, Harold C....Lancaster
Stratte, J. J....Hallock
Stuurmans, S. H....Erskine
Swedenberg, A. W....Thief River Falls
Turnbull, Robert....Fosston
Watson, N. M....Red Lake Falls
Wattam, G. S....Warren
Werner, O. S....St. Hilaire
Wilson, Arthur N....Warroad
Wiltrout, I. Geo....Oslo

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings, at call of president.
Annual meeting, May

President
Dubbe, F. H....New Ulm

Secretary
Meierding, Wm. A....New Ulm

Adams, J. L....Morgan
Dubbe, F. H....New Ulm
Eckstein, A. W....Comfrey
Fritsche, Albert....New Ulm
Fritsche, L. A....New Ulm
Hammermeister, Theodore F....New Ulm
Jamieson, Earl....Walnut Grove
Kiefer, M. A....Sleepy Eye
Kolset, Carl D....Sanborn
Madden, John F....Gibbon
Meierding, Wm. A....New Ulm
Pederson, O. J....Hanska
Peterson, R. A....Vesta
Reineke, George F....New Ulm
Rothenburg, J. C....Springfield
Saffert, Cornelius A....New Ulm
Schoch, J. L....New Ulm
Seifert, Otto J....New Ulm
Shroder, J. S....Springfield
Strickler, A. F....Sleepy Eye
Vogel, Joseph....New Ulm
Vogtel, Melvin A....Minneapolis
Weiser, Geo. B....New Ulm
Wellcome, J. W. B....Sleepy Eye
Wohlrabe, E. J....Springfield

RICE COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.
Annual meeting, January

President
Traeger, C. A....Faribault

Secretary
Plonske, C. J....Faribault

Babcock, F. M....Northfield
Davis, F. U....Faribault
Dungay, Neil S....Northfield
Francis, David W....Morristown
Haessly, S. B....Faribault
Hanson, A. M....Faribault
Huxley, F. R....Faribault
Kanne, C. W....Faribault
Lee, W. P....Northfield
Lexa, F. J....Lonsdale
McBroom, D. E....Faribault
Mayland, M. L....Faribault
Meyer, P. F....Faribault
Moses, Joseph, Jr....Northfield
Plonske, C. J....Faribault
Robilliard, C. M....Faribault
Robilliard, W. H....Faribault
Rumpf, C. W....Faribault
Rumpf, W. H....Faribault
Smith, P. A....Faribault
Traeger, C. A....Faribault
Warren, F. S....Faribault
Wilson, Warren....Northfield
Wilson, W. E....Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

St. Louis, Lake, Cook, and Carlton Counties.
Regular meetings, second Thursday of month.
Annual meeting, second Thursday of October.

President
Hirschboeck, F. J....Duluth

Secretary
Lepak, F. J....Duluth

Abbott, Wm. P....Duluth
Adams, B. S....Hibbing
Alexander, Clifford E....Duluth
Anderson, Hilding C....Duluth
Arminen, K. V....Duluth
Armstrong, E. L....Duluth
Athens, A. G....Duluth
Ayres, G. T....Ely
Bagley, W. R....Duluth
Bakkila, Henry....Duluth
Bardon, Richard....Duluth
Barney, L. A....Duluth
Berdez, G. L....Duluth
Bergquist, K. E....Duluth
Bianco, A. J....Duluth
Binet, H. E....Grand Rapids
Blacklock, S. S....Hibbing
Blakely, C. C....Barnum
Block, Phoebe P....Virginia
Boman, P. G....Duluth
Bowen, Robert L....Hibbing
Boyer, S. H....Duluth
Bradley, E. L....Superior, Wis.
Bray, C. W....Biwabik
Briggs, F. W....Duluth

Brunet, L. M.....Cloquet
Bullen, F. W.....Hibbing
Burns, R. L.....Two Harbors
Carstens, C. F.....Hibbing
Chapman, T. L.....Duluth
Cheney, E. L.....Duluth
Christensen, E. P.....Two Harbors
Clark, F. F.....Duluth
Clement, T. G.....Duluth
Collins, A. N.....Duluth
Collins, H. C.....Duluth
Cosgrove, J. H.....Duluth
Coventry, W. A.....Duluth
Daniels, H. A.....Eveleth
Davis, B. F.....Duluth
Davis, H. S.....Duluth
Doolittle, L. E.....Duluth
Drenning, F. C.....Duluth
Eckman, P. F.....Duluth
Eisenman, W. G.....Chisholm
Ekblad, J. W.....Duluth
Eklund, Wm. J.....Duluth
Elias, F. J.....Duluth
Empie, W. M.....Virginia
Eppard, R. M.....Cloquet
Estrem, T. A.....Hibbing
Ewens, H. B.....Virginia
Ferreira, G. J.....Aurora
Fischer, Mario McC.....Duluth
Fleming, James.....Cloquet
Forbes, R. S.....Duluth
Fuerste, Frederick.....Proctor
Gardner, R. D.....Eveleth
Gauthier, W. L.....Virginia
Gillespie, M. G.....Duluth
Gillespie, N. H.....Duluth
Giroux, A. A.....Duluth
Gowan, L. R.....Duluth
Graham, David.....Duluth
Graham, R. D.....Duluth
Graham, Robert.....Duluth
Grawn, F. A.....Duluth
Gray, Royal C.....Cook
Greeley, L. O.....Duluth
Ground, H. T.....Virginia
Hall, Andrea E.....Virginia
Haney, C. L.....Duluth
Harris, C. N.....Chisholm
Hatch, W. E.....Duluth
Hayes, M. F.....Nashwauk
Heimark, O. E.....Duluth
Hill, Frederick E.....Duluth
Hirschboeck, F. J.....Duluth
Hirschfield, M. S.....Duluth
Hovde, H.....Duluth
Hursh, M. M.....Grand Rapids
Jensen, T. J.....Duluth
Kean, N. D.....Coleraine
Kerlan, M.....Moose Lake
Keyes, C. R.....Duluth
Kiesling, I. H.....Nashwauk
King, W. S.....Eveleth
Klein, Harry.....Duluth
Kliman, Frank E.....Duluth
Knapp, F. N.....Duluth
Kohlbry, C. O.....Duluth
Kraft, Peter.....Duluth
Kuth, J. R.....Duluth
Laird, A. T.....Nopeming
Lenont, C. B.....Virginia
Lepak, F. J.....Duluth
Lindgren, E. I.....Duluth
Litman, Samuel N.....Duluth
Loofbourrow, Elias H.....Keewatin
Lum, C. E.....Duluth
McCarty, P. D.....Ely
McComb, C. F.....Duluth
McCoy, Mary.....Duluth
McDaniel, S. P.....Mountain Iron
McDonald, A. L.....Duluth
McGiffert, E. N.....Duluth
McHaffie, O. L.....Duluth
McIntyre, E. H.....Virginia
McMurtry, Walter C.....Virginia
McNutt, John R.....Two Harbors
MacRae, Gordon C.....Duluth
Magie, W. H.....Duluth
Magney, F. H.....Duluth
Manley, J. R.....Duluth
Mattill, P. M.....Oak Terrace
Merriman, L. L.....Duluth
Morcom, H. W.....Duluth
More, C. W.....Eveleth
Morsman, L. W.....Hibbing
Morss, C. R.....Zumbrota
Murray, D. D.....Duluth
Nelson, E. H.....Chisholm
Nicholson, M. A.....Duluth
Olson, Albert F.....Duluth
Oredson, O. A.....Duluth
Pake, S. G.....Duluth
Parker, O. W.....Ely
Paulson, G. A.....Duluth
Payette, C. H.....Duluth
Pennie, D. F.....Duluth
Perley, A. E.....Chisholm
Peterson, Edward.....Buhl
Power, J. E.....Duluth
Raadquist, C. S.....Hibbing
Raihala, John.....Virginia
Raiter, Franklin W. S.....Cloquet
Raiter, Roy F.....Cloquet
Reynolds, Hugh.....Hibbing
Robinson, J. M.....Duluth
Rood, D. C.....Duluth
Rowe, O. W.....Duluth
Rudie, P. S.....Duluth
Ryan, W. J.....Duluth
St. Clair, G. G.....Duluth
Scherer, C. A.....Duluth
Schroder, C. H.....Duluth
Seashore, D. E.....Duluth
Shapiro, E. Z.....Duluth
Shaw, A. W.....Buhl
Slyfield, F. F.....Duluth
Smith, C. M.....Duluth
Smith, E. K.....Duluth
Spicer, F. W.....Duluth
Strobel, W. G.....Duluth
Stuart, A. B.....Cloquet
Sukeforth, L. A.....Duluth
Sutherland, H. N.....Ely
Swenson, Arnold O.....Duluth
Swenson, Paul C.....Duluth
Taylor, C. W.....Duluth
Tibbetts, M. H.....Duluth
Tilderquist, D. L.....Duluth
Tuohy, E. L.....Duluth
Turnbull, F. M.....Duluth
Urberg, S. E.....Duluth
Van de Steeg, Wm. G.....Biwabik
Vercellini, C. E.....Duluth
Walker, A. E.....Duluth
Webber, Edward E.....Proctor
Weber, M. L.....Duluth
Webster, H. E.....Duluth
Weirick, Howard R.....Hibbing
Wheeler, D. W.....Duluth
Wilkinson, Stella.....Duluth
Winter, J. A.....Duluth
Young, T. O.....Duluth
Young, V. A.....Duluth
Zlatovski, Michael.....Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, first Thursday in March, June, September, December.
Annual meeting, first Thursday in June.

President
Maertz, W. F.....New Prague

Secretary
Reiter, H. W.....Shakopee

Buck, Fred H.....Shakopee
Eklund, E. J.....Norwood
Fischer, H. P.....Shakopee
Fischer, P. M.....Shakopee
Hebeisen, M. B.....Carver
Henriksen, H. G.....Elko
Juergens, H. M.....Belle Plaine
McKeon, James.....St. Paul
Maertz, W. F.....New Prague
Moloney, G. R.....Belle Plaine
Nagel, H. D.....Waconia
Novak, E. E.....New Prague
Olson, Chester J.....Belle Plaine
Phillips, W.H.....Jordan
Reiter, H. W.....Shakopee
Schneider, H. A.....Jordan
Simons, Bern. H.....Chaska
Westerman, F. C.....Montgomery
Wohlrabe, Clarence.....Springfield

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Pipestone, Rock, Murray, Nobles, Cottonwood and Jackson Counties.
Regular meetings, May and November.
Annual meeting, November.

President
Chadbourn, A. G.....Heron Lake

Secretary
McKeown, E. G.....Pipestone

Arnold, E. W.....Adrian
Atkins, G. L.....Jackson
Basinger, H. P.....Windom
Basinger, Harvey R.....Mountain Lake
Benjamin, W. G.....Pipestone
Bofenkamp, F. W.....Luverne
Bong, J. H.....Jasper
Brown, A. H.....Pipestone
Chadbourn, A. G.....Heron Lake
Cress, P. J.....Ellsworth
DeBoer, Hermanus.....Edgerton
Ditmeier, L. M. Gerber.....Jasper
Dolan, C. P.....Worthington
Doms, H. C.....Slayton
Doms, Wm.....Woodstock
Dudley, J. H.....Windom
Golden, C. M.....Tyler
Halloran, Walter.....Jackson
Hilger, J. M.....Iona
Hitchings, W. S.....Lakefield
Johnson, Ellsworth.....Windom
Kelling, Louis F.....Lakefield
Knudtson, H. M.....Browerville
Leebens, J. H.....Lismore
Lowe, Thos.....Pipestone
McCrea, James.....Fulda
McKeown, E. G.....Pipestone
Manson, F. M.....Worthington
Metcalf, F. W.....Fulda
Mork, B. O.....Worthington
Patterson, W. E.....Westbrook
Piper, Wm. A.....Mountain Lake
Rose, J. T.....Lakefield
Schutz, Elmer S.....Mountain Lake
Sherman, C. L.....Luverne
Slater, S. A.....Worthington
Smallwood, J. T.....Worthington
Sogge, L.....Windom
Taylor, Wm. J.....Pipestone
Thorson, E. O.....Luverne
Tiedemann, Elmer J.....Adrian
Tofte, Josephine.....Dawson
Waller, Joseph D.....Wilmont
Warren, C. L.....Brewster
Watson, F. G.....Worthington
Williams, Leon A.....Slayton
Wright, C. O.....Luverne

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, monthly, fourth Thursday.
Annual meeting, April

President
Libert, John N.—St. Cloud

Secretary
Stangl, P. E.—St. Cloud

Adams, L. P.—St. Cloud
Boehm, J. C.—St. Cloud
Brigham, C. F.—St. Cloud
Buscher, Julius—Albany
Clark, H. B.—St. Cloud
DuBois, J. A.—Sauk Center
DuBois, J. F.—Sauk Center
Fleming, T. N.—St. Cloud
Freeman, W. L.—St. Cloud
Friesleben, Wm.—Sauk Rapids
Gelz, J. J.—St. Cloud
Goehrs, H. W.—St. Cloud
Groebbner, O. A.—Cold Spring
Haberman, E.—Osakis
Hemstead, Werner—St. Cloud
Holdridge, Geo.—Foley
Johnson, Walfred—Sauk Center
Jones, Richard N.—Richmond
Kern, M. J.—St. Cloud
Kingsbury, E. M.—Clearwater
Kohler, D. W.—St. Joseph
Kuhlman, Aug.—Melrose
Lewis, C. B.—St. Cloud
Libert, John N.—St. Cloud
McDowell, J. P.—St. Cloud
McKibben, H. E.—St. Cloud
Mahwald, A.—Albany
Meyer, A. A.—Melrose
Moynihan, A. F.—Sauk Center
Myre, C. R.—Paynesville
Pfaff, E. K.—Shoals, Ind.
Rathbun, C. A.—St. Cloud
Richards, W. B.—St. Cloud
Richardson, Fred S.—Belgrade
Ridgeway, Alexander—Elrosa
Schatz, F. J.—St. Cloud
Sherwood, G. E.—Kimball
Stangl, Fred—St. Cloud
Stangl, P. E.—St. Cloud
Sutton, Chas. S.—St. Cloud
Sweetman, R. H.—Sauk Center

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, odd months, second Tuesday.
Annual meeting, November

President
Quigley, T. C.—Owatonna

Secretary
McIntyre, John A.—Owatonna

Ertel, E. Q.—Ellendale
Gault, C. C.—Owatonna
Hart, A. B.—Owatonna
Hart, Alfred B., Jr.—Owatonna
McIntyre, John A.—Owatonna
Melby, Benedik—Blooming Prairie
Nelson, Ernest J.—Owatonna
Peterson, Christian—Owatonna
Quigley, T. C.—Owatonna
Senn, E. W.—Owatonna
Smersh, F. M.—Owatonna
Smersh, J. F.—Owatonna
Stewart, A. B.—Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Crow Wing, Morrison, Cass, Todd, Wadena, Clearwater, Koochiching, Hubbard, Itasca, and Beltrami Counties.
Regular meetings, June and January.
Annual meeting, January

President
Kelly, B. W.—Aitkin

Secretary
Badeaux, G. I.—Brainerd

Agnew, Allen T.—International Falls
Allen, F. A.—Crosby
Allen, F. H.—Staples
Anderson, C. E.—Brainerd
Badeaux, G. I.—Brainerd
Beise, R. A.—Brainerd
Carlson, H. A.—Brainerd
Christie, G. R.—Long Prairie
Christie, R. L.—Long Prairie
Corrigan, J. E.—Spooner
Craig, C. C.—International Falls
Crowl, V. C.—Home Gardens, Cal.
Davis, L. Thomas—Wadena
Davis, Thayer C.—Wadena
Forrest, C. G.—Clearbrook
Garlock, A. V.—Bemidji
Garlock, Dewitt H.—Bemidji
Gerber, Milo P.—Brainerd
Ghostley, Mary C.—International Falls
Goodheart, C. J.—Akely
Hall, P. M.—Ah-Gwah-Ching
Hawkinson, L. F.—Brainerd
Healy, R. T.—Pierz
Holst, C. F.—Little Falls
Holst, J. B.—Little Falls
House, Z. E.—Cass Lake
Houston, C. A.—Park Rapids
Johnson, E. W.—Bemidji
Kelly, B. W.—Aitkin
Kenyon, Paul—Wadena
Kerlan, S. Z.—Aitkin
Laney, R. L.—Puposky
Laughlin, J. T.—Grey Eagle
McHugh, Roderick F.—Aitkin
McKinnon, J. J.—Wadena
Marcum, E. H.—Bemidji
Miller, W. A.—New York Mills
Moyer, Ralph E.—Bemidji
Nelson, Nesmith—Brainerd
Nomland, Ruben—Brainerd
Ortman, John W.—Pierz
Osburn, B. F.—International Falls
Pengelly, E. J.—Crosby
Pierce, Chas. H.—Wadena
Ratcliffe, J. J.—Aitkin
Reeves, C. E.—Eagle Bend
Roberts, L. M.—Little Falls
Rosenfield, A. B.—Pequot
Schwyzer, R.—Blackduck
Shannon, S. S.—Crosby
Simons, Edwin J.—Weanville
Smith, B. A.—Crosby
Thabes, J. A.—Brainerd
Van Valkenburg, B. F.—Long Prairie
Van Valkenburg, F. W.—Long Prairie
Watson, A. M.—Royalton
Watson, John D.—Holdingford
Wilcox, F. L.—Walker
Will, W. W.—Bertha
Williams, R. J.—Pine River

WABASHA COUNTY MEDICAL SOCIETY

Annual meeting, first Thursday after first Monday in July.

President
Collins, J. S.—Wabasha

Secretary
Wilson, W. F.—Lake City

Anderson, Arnold S.—Wabasha
Bayley, E. H.—Lake City
Bowers, H. E.—Lake City
Cochrane, W. J.—Lake City
Collins, J. S.—Wabasha
Dempsey, D. P.—Kellogg
Fleischbauer, D. S.—Wabasha
Radabaugh, R. C.—Hastings
Replogle, W. H.—Wabasha
Slocumb, J. A.—Plainview
Sutton, L. F.—Mazeppa
Wilson, W. F.—Lake City

WASECA COUNTY MEDICAL SOCIETY

Annual meeting, December.

President
McIntire, H. M.—Waseca

Secretary
Swenson, O. J.—Waseca

Bergman, O. B.—Janesville
Blanchard, H. G.—Waseca
Hagen, H. O.—New Richland
Leopard, B. A.—New Richland
McIntire, H. M.—Waseca
Miller, H. A.—Waseca
O'Hara, J. J.—Janesville
Swartwood, F. A.—Waseca
Swenson, O. J.—Waseca

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of month.
Annual meeting, second Tuesday in December.

President
Boleyn, E. S.—Stillwater

Acting Secretary
Landeen, F. G.—Stillwater

Blakey, A. R.—Stillwater
Boleyn, E. S.—Stillwater
Combacker, L. C.—Stillwater
Culver, Lucian G.—Stillwater
Haines, J. H.—Stillwater
Humphrey, W. R.—Stillwater
Josewski, R. J.—Stillwater
Kalinoff, D.—Stillwater
Landeen, F. G.—Stillwater
Poirier, J. A.—Forest Lake
Rygh, E. A.—Stillwater
Sherman, Carnot H.—Bayport
Stuhr, J. W.—Stillwater
Thompson, V. C.—Marine

WATONWAN COUNTY MEDICAL SOCIETY

Regular meetings, on call.
Annual meeting, December.

President
Bregel, Fred L.....St. James
Secretary
Grimes, H. B.....Madelia

Bregel, Fred L.....St. James
Grimes, H. B.....Madelia
Hagen, O. E.....Butterfield
Hefke, Hans W.....St. James
McCarthy, W. J.....Madelia
Thompson, Albert.....St. James

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Traverse, Pope, and Stevens Counties.
Regular meetings, February, June, October, December.
Annual meeting, December.

President
Ewing, C. F.....Wheaton
Secretary
Linde, Herman.....Cyrus

Arnson, J. M.....Graceville
Bates, B. V.....Browns Valley
Bergan, Otto.....Clinton
Bolsta, Chas.....Ortonville
Karn, B. R.....Ortonville
Leland, John T.....Herman
Caine, C. E.....Morris
Christenson, C. R.....Starbuck
Cumming, J. F.....Chokio
Eberlin, E. A.....Glenwood
Elsey, J. R.....Glenwood
Ewing, C. F.....Wheaton
Fitzgerald, E. T.....Morris
Gibbon, L. L.....Lowry
Judge, Walter T.....Graceville
Leuty, Amos.....Morris
Lindberg, A. L.....Wheaton
Linde, Herman.....Cyrus
O'Donnell, D. M.....Ortonville
Oliver, C. I.....Graceville
Opheim, O. V.....Starbuck
Pierson, Claude M.....Wheaton
Ransom, M. L.....Hancock
Shelver, H. J.....Ortonville
Weir, J. D.....Beardsley

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, and September.
Annual meeting, first Monday in January.

President
Neumann, C. A.....Lewiston
Secretary
Steiner, I. W.....Winona

Adler, Stuart W.....Winona
Bear, H. C.....St. Charles
Benoit, F. T.....Winona
Nauth, W. W.....Winona
Clay, F. H.....St. Charles
Heise, W. F. C.....Winona
Keyes, E. D.....Winona
Leicht, O.....Winona
Lichtenstein, H.....Winona
Lindsay, W. V.....Winona
McDonnell, C. H.....Winona
McLaughlin, E. M.....Winona
Neumann, C. A.....Lewiston
Pritchard, D. B.....Winona
Risser, E. D.....Winona
Robbins, C. P.....Winona
Schaefer, S.....Winona
Schnarrenberger, G.....Rollingstone
Steiner, I. W.....Winona
Tweedy, G. J.....Winona
Walker, G. H.....Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.
Annual meeting, October.

President
Moffat, A. G.....Howard Lake
Secretary
Catlin, John J.....Buffalo

Catlin, John J.....Buffalo
Ellison, Frank E.....Monticello
Freed, O. J. R.....Cokato
Harriman, L.....Howard Lake
Klaveness, E.....Monticello
Moffat, A. G.....Howard Lake
Norris, G. H.....Annandale
Peterson, O. L.....Cokato
Phillips, A. E.....Delano
Ridgway, A. M.....Annandale
Roholt, C. L.....Waverly
Rousseau, Victor.....Maple Lake
Shrader, E. E.....Watertown
Sturges, C. J.....Buffalo
Swezey, B. F.....Buffalo
Thoresen, Thor.....Brooklyn, N. Y.

ALPHABETICAL ROSTER

Aanes, A. M. — Red Wing
Abbott, J. S. — St. Paul
Abbott, Wm. P. — Duluth
Abramovich, J. H. — St. Paul
Adair, F. L. — Minneapolis
Adams, B. S. — Hibbing
Adams, J. L. — Morgan
Adams, L. P. — St. Cloud
Adams, R. C. — Bird Island
Adams, Rollin T. — Mantorville
Adams, S. Franklin — Rochester
Adkins, C. M. — Grygla
Adler, Stuart W. — Winona
Adson, A. W. — Rochester
Affeldt, Daniel E. — Kasson
Agnew, Allen T. — International Falls
Ahrens, A. E. — St. Paul
Ahrens, A. H. — St. Paul
Aitkens, H. B. — LeSueur Center
Akester, Ward — Marshall
Alberts, Max W. — St. Paul
Alden, J. F. — St. Paul
Aldes, Harry — St. Paul
Aldrich, F. H. — Belview
Alexander, Clifford E. — Duluth
Alexander, F. H. — St. Paul
Aling, C. P. — Minneapolis
Allen, A. W. — Austin
Allen, Chas. C. — Austin
Allen, Edgar V. — Rochester
Allen, F. A. — Crosby
Allen, F. H. — Staples
Allen, H. W. — Minneapolis
Allen, Mason — St. Paul
Allen, Roy W. — Rochester
Allen, W. A. — Rochester
Allison, R. G. — Minneapolis
Almquist, H. E. — Minneapolis
Altnow, Hugo O. — Minneapolis
Alvarez, Walter C. — Rochester
Amberg, Samuel — Rochester
Anderson, A. E. — Minneapolis
Anderson, Arnold S. — Wabasha
Anderson, Arnt G. — Minneapolis
Anderson, C. E. — Brainerd
Anderson, C. M. — Rochester
Anderson, David D. — Minneapolis
Anderson, E. W. — Rochester
Anderson, Edward D. — Minneapolis
Anderson, Ernest R. — Minneapolis
Anderson, Frank J. — Minneapolis
Anderson, Gilbert C. — Rochester
Anderson, Hilding C. — Duluth
Anderson, J. K. — Crookston
Anderson, J. V. — Red Wing
Anderson, Mark J. — Rochester
Anderson, Norman E. — Harmony
Anderson, S. H. — Red Wing
Anderson, Silas C. — Minneapolis
Anderson, W. S. — Minneapolis
Andrews, J. W. — Mankato
Andrews, R. N. — Mankato
Annis, H. B. — Minneapolis
Arey, H. C. — Excelsior
Arminen, K. V. — Duluth
Armstrong, E. L. — Duluth
Armstrong, J. M. — St. Paul
Arnold, E. W. — Adrian
Arnold, James E. — Mapleton
Arnquist, A. S. — St. Paul
Arnson, J. M. — Graceville
Arouni, Khalil — St. Paul
Arvidson, C. G. — Minneapolis
Arzt, C. P. — St. Paul
Asbury, J. T. — Rochester
Athens, A. G. — Duluth
Atkins, G. L. — Jackson
Aune, Martin — Minneapolis
Aurand, W. H. — Minneapolis
Aurelius, J. Richards — Rochester
Aurness, P. A. — Minneapolis
Avery, J. Fowler — Minneapolis
Axilrod, D. L. — Hutchinson
Aylmer, A. L. — Minneapolis
Ayres, G. T. — Ely

Babcock, F. M. — Northfield
Backe, Edmund — Kenyon
Bacon, Donald K. — St. Paul
Bacon, Knox — San Diego, Calif.
Bacon, L. C. — St. Paul
Bacon, R. S. — Montevideo
Badeaux, G. I. — Brainerd
Bagley, W. R. — Duluth
Bailey, H. B. — Ceylon
Baken, Melvin P. — Minneapolis
Baker, A. C. — Fergus Falls
Baker, Alfred T. — Minneapolis
Baker, E. L. — Minneapolis
Baker, Looe — Minneapolis
Bakke, O. H. — Minneapolis
Bakkila, Henry — Duluth
Balcome, F. E. — St. Paul
Balfour, D. C. — Rochester
Ball, C. R. — St. Paul
Bannick, Edwin G. — Rochester
Barborka, C. J. — Rochester
Bardon, Richard — Duluth
Bargen, J. Arnold — Rochester
Barker, Nelson W. — Rochester
Barnes, A. R. — Rochester
Barney, L. A. — Duluth
Barron, Moses — Minneapolis
Barry, L. W. — St. Paul
Barsness, Nellie — St. Paul
Barton, E. R. — Minneapolis
Basinger, H. P. — Windom
Basinger, Harvey R. — Mountain Lake
Baskett, George T. — Retreat, Pa.
Baskett, Olive T. — Retreat, Pa.
Bass, G. W. — Minneapolis
Bates, B. V. — Browns Valley
Baumgartner, Conrad J. — Rochester
Baxter, Geoffrey H. — Rochester
Baxter, S. H. — Minneapolis
Bayha, Carl H. — Rochester
Bayley, E. H. — Lake City
Beach, Watson — Rochester
Beadie, W. D. — Cannon Falls
Beals, Hugh — St. Paul
Bear, H. C. — St. Charles
Beard, Archie H. — Minneapolis
Beard, R. O. — Minneapolis
Bedford, E. W. — Minneapolis
Beise, R. A. — Brainerd
Bell, C. C. — St. Paul
Bell, E. T. — Minneapolis
Bell, J. W. — Minneapolis
Belote, G. B. — Caledonia
Benedict, E. E. — Minneapolis
Benedict, W. L. — Rochester
Benepe, L. M. — St. Paul
Benham, E. W. — Mankato
Benjamin, A. E. — Minneapolis
Benjamin, W. G. — Pipestone
Benn, F. G. — Minneapolis
Bennion, P. H. — St. Paul
Benoit, F. T. — Winona
Bentley, Norman P. — St. Paul
Berdez, G. L. — Duluth
Bergan, Otto — Clinton
Bergen, Ralph D. — Rochester
Bergh, L. N. — Montevideo
Bergheim, M. C. — Hawley
Bergman, O. B. — Janesville
Bergquist, K. E. — Duluth
Berkman, C. M. — Rochester
Bernard, B. C. — Thief River Falls
Berrisford, Paul D. — St. Paul
Bertelson, O. L. — Crookston
Bessesen, A. N., Sr. — Minneapolis
Bessesen, Al. N., Jr. — Minneapolis
Bessesen, Daniel H. — Minneapolis
Bessesen, W. A. — Minneapolis
Best, F. E. — Wells
Bianco, A. J. — Duluth
Biedermann, Jacob — Thief River Falls
Bigelow, C. E. — Dodge Center
Binet, H. E. — Grand Rapids
Binger, H. E. — St. Paul
Birnberg, T. L. — St. Paul
Bishop, Chas. W. — Minneapolis
Bissell, F. S. — Minneapolis
Bjorgo, C. W. — Cannon Falls
Black, Wm. — Mankato
Blackford, Launcelot M. — Rochester
Blacklock, S. S. — Hibbing
Blake, Jas. — Hopkins
Blakely, C. C. — Barnum
Blakey, A. R. — Stillwater
Blanchard, H. G. — Waseca
Blanton, Smiley — Minneapolis
Blaustone, Henry H. — Minneapolis
Blegen, H. M. — Warren
Bliss, John H. — Rochester
Block, Phoebe P. — Virginia
Blumenthal, Jacob — Minneapolis
Bock, R. A. — St. Paul
Bockman, M. W. H. — Minneapolis
Bodine, Marc W. — Rochester
Boeckmann, Eduard — St. Paul
Boeckmann, Egil — St. Paul
Boehm, J. C. — St. Cloud
Bofenkamp, F. W. — Luverne
Bohland, E. H. — St. Paul
Bohling, B. S. — Sandstone
Bole, R. S. — St. Paul
Boleyn, E. S. — Stillwater
Bolsta, Chas. — Ortonville
Bolstad, H. C. — St. Paul
Boman, P. G. — Duluth
Bomberger, C. B. — Mapleton
Bong, J. H. — Jasper
Bonta, M. B. — Rochester
Booth, A. E. — Minneapolis
Boothby, W. M. — Rochester
Boquist, E. T. W. — Minneapolis
Boquist, Harold S. — Minneapolis
Boreen, C. A. — Minneapolis
Borg, Joseph F. — St. Paul
Borgeson, Egbert J. — St. Paul
Borreson, Baldwin — Remer
Bossert, C. S. — Mora
Bossingham, O. N. — Lake Benton
Bottolfson, T. F. — Moorhead
Bouma, L. R. — St. Paul
Bouman, H. A. — Minneapolis
Bowen, Robert L. — Hibbing
Bowers, H. E. — Lake City
Bowers, J. T. — Thief River Falls
Bowing, H. H. — Rochester
Bowles, John H. — Rochester
Boyer, S. H. — Duluth
Boynton, Ruth — Minneapolis
Boysen, H. — Welcome
Boysen, Peter — Pelican Rapids
Braasch, Wm. F. — Rochester
Brabec, F. J. — Perham
Bracken, H. M. — Claremont, Cal.
Brading, Edward T. — Rochester
Bradley, E. L. — Superior, Wis.
Brand, G. D. — St. Paul
Brand, W. A. — Redwood Falls
Branham, D. S. — Albert Lea
Branton, A. F. — Willmar
Branton, B. J. — Willmar
Bratrud, O. Edward — Warren
Bratrud, Theodor — Warren
Bratrude, E. J. — Rochester
Bray, C. W. — Biwabik
Bray, E. R. — St. Paul
Bregel, Fred L. — St. James
Briggs, F. W. — Duluth
Brigham, C. F. — St. Cloud
Brigham, Frank — Watkins
Brimhall, J. B. — St. Paul
Brockbank, Thos. Wm. — Rochester
Broders, A. C. — Rochester
Brodie, Walter D. — St. Paul
Broker, W. S. — Battle Lake
Brooks, Chas. N. — Minneapolis
Brooks, D. F. — St. Paul
Brooks, G. F. — St. Paul
Brown, A. E. — Rochester
Brown, A. H. — Pipestone
Brown, Edgar D. — Minneapolis
Brown, Ed I. — St. Paul
Brown, Felix M. — Rochester
Brown, G. E. — Rochester
Brown, John C. — St. Paul
Brown, Lyle L. — Crookston
Brown, P. W. — Rochester
Brown, R. S. — Minneapolis
Brown, S. E. — St. Paul
Browning, W. E. — Caledonia
Brunet, L. M. — Cloquet
Buck, Fred H. — Shakopee
Bueerman, Winifred H. — Rochester
Buie, L. A. — Rochester
Bulkley, Kenneth — Minneapolis
Bullen, F. W. — Hibbing
Bumpus, H. C. — Rochester
Burch, F. E. — St. Paul
Burfield, G. H. — St. Paul
Burling, Temple — Minneapolis
Burnap, W. L. — Fergus Falls
Burns, F. W. — St. Paul
Burns, H. D — Albert Lea
Burns, M. A. — Milan
Burns, R. L. — Two Harbors
Burns, R. M. — St. Paul

Busby, James L. Rochester
Buscher, Julius Albany
Busher, H. St. Paul
Butler, John Minneapolis
Button, A. J. Greenbush
Butturff, C. R. Freeborn
Butz, J. A. Monterey
Byrnes, W. J. Minneapolis

Cabot, George S. Minneapolis
Cabot, V. S. Minneapolis
Cady, L. H. Minneapolis
Caine, A. T. Anoka
Caine, C. E. Morris
Caldwell, Jas. P. St. Paul
Caldwell, Kenneth S. St. Paul
Caley, G. R. Princeton
Calhoun, F. W. Albert Lea
Callahan, F. F. Pokegama
Cameron, J. A. St. Paul
Camp, W. E. Minneapolis
Campbell, J. E. South St. Paul
Campbell, L. M. Minneapolis
Campbell, Robert Minneapolis
Cannon, Harry St. Paul
Carlaw, C. M. Minneapolis
Carlson, H. A. Brainerd
Carman, C. L. St. Paul
Carman, Paul I. St. Paul
Carroll, Wm. C. St. Paul
Carstens, C. F. Hibbing
Carter, Fred G. St. Paul
Catlin, John J. Buffalo
Cavanaugh, J. O. St. Paul
Caylor, Harold D. Rochester
Chadbourn, A. G. Heron Lake
Chambers, Stanley O. Philadelphia, Pa.
Chambers, W. C. Blue Earth
Chapman, T. L. Duluth
Chatterton, C. C. St. Paul
Cheleen, S. J. Minneapolis
Cheney, E. L. Duluth
Cherry, Chas. H. Minneapolis
Chesley, A. J. Minneapolis
Chorest, J. C. R. Marshall
Christensen, E. P. Two Harbors
Christenson, C. R. Starbuck
Christiansen, A. St. Paul
Christianson, H. W. Wykoff
Christie, G. R. Long Prairie
Christie, R. L. Long Prairie
Christison, J. T. St. Paul
Chumley, Charles L. Rochester
Cirkler, A. A. Minneapolis
Clark, F. F. Duluth
Clark, H. B. St. Cloud
Clark, H. S. Minneapolis
Clay, E. M. Hutchinson
Clay, F. H. St. Charles
Claydon, L. E. Red Wing
Clement, J. B. Lester Prairie
Clement, T. G. Duluth
Clifford, F. F. West Concord
Cobb, S. G. St. Paul
Cobb, Willis F. Lyle
Cochrane, W. J. Lake City
Coffey, Jay R. Rochester
Colby, Woodard St. Paul
Cole, H. B. Redwood Falls
Cole, Wallace H. St. Paul
Coleman, F. B. Austin
Collie, H. G. St. Paul
Collins, A. N. Duluth
Collins, H. C. Duluth
Collins, J. S. Wabasha
Colvin, A. R. St. Paul
Combacker, L. C. Stillwater
Comfort, Mandred W. Rochester
Comstock, A. E. St. Paul
Condit, W. H. Minneapolis
Conley, Alva A. Cannon Falls
Conner, H. M. Rochester
Conner, Wm. H. St. Paul
Connor, C. E. St. Paul
Constans, Geo. M. St. Paul
Cook, Henry Wireman Minneapolis
Cook, Paul B. St. Paul
Cooney, H. C. Princeton
Cooperman, H. O. Minneapolis
Corbeille, Catherine Rochester
Corbett, J. Frank Minneapolis
Corrigan, J. E. Spooner
Cosgriff, J. A. North Mankato
Cosgrove, J. H. Duluth
Cosman, E. O. Minneapolis
Counseller, Virgil S. Rochester
Countryman, Roger S. St. Paul
Covell, W. W. St. Peter
Coventry, W. A. Duluth
Cowern, E. W. North St. Paul
Cowing, P. G. Evansville
Crafts, Leo M. Minneapolis
Craig, C. C. International Falls
Craig, Wm. McK. Rochester
Crandall, A. M. Madison
Crane, Wm. W., Jr. Rochester
Cranmer, Richard R. Minneapolis
Creighton, Ralph H. Minneapolis
Cremer, M. H. Red Wing
Crenshaw, J. L. Rochester
Cress, E. E. Boyd
Cress, P. J. Ellsworth
Crewe, J. E. Rochester
Critchfield, L. R. St. Paul
Crowl, V. C. Home Gardens, Cal.
Crume, Geo. P. Minneapolis
Crump, J. W. St. Paul
Culligan, J. M. St. Paul
Culver, Lucian G. Stillwater
Cumming, J. F. Chokio
Curtin, John F. Minneapolis
Cutts, G. A. C. Litchfield
Cutts, George Minneapolis

Dack, Lloyd G. St. Paul
Dady, Elmer E. Minneapolis
Dahl, Elmer O. Minneapolis
Dahl, G. A. Mankato
Dahl, John A. Minneapolis
Dahlstrom, A. W. Minneapolis
Daignault, Oscar Benson
Daniel, Donald H. Minneapolis
Daniels, H. A. Eveleth
Daniels, J. W. St. Peter
Danielson, K. A. Litchfield
Darling, J. B. St. Paul
Darrow, D. C. Moorhead
Dart, Leslie O. Minneapolis
Daugherty, E. B. St. Paul
Daugherty, L. E. St. Paul
Davis, Austin C. Rochester
Davis, B. F. Duluth
Davis, F. U. Faribault
Davis, F. W. Adams
Davis, Herbert St. Paul
Davis, H. S. Duluth
Davis, I. Grant Rushford
Davis, John D. Rochester
Davis, L. Thomas Wadena
Davis, Thayer C. Wadena
Davis, William St. Paul
Davison, P. C. Willmar
Dean, Arthur C. Crookston
DeBoer, Hermanus Edgerton
Decker, Walter J. Rochester
Dedolph, Karl St. Paul
Delmore, J. I. Roseau
Dempsey, D. P. Kellogg
Denman, A. V. Mankato
Derauf, B. I. St. Paul
Desjardins, Arthur U. Rochester
Devereaux, T. G. Wayzata
Dezell, Earl R. Minneapolis
Deziel, G. Minneapolis
Dickson, Thos. H., Jr. St. Paul
Diehl, Harold S. Minneapolis
Diessner, H. D. Minneapolis
Disen, C. F. Minneapolis
Ditmeier, L. M. Gerber Jasper
Dittman, Geo. C. St. Paul
Dixon, Claude F. Rochester
Dixon, Robert K. Rochester
Dobson, Herbert V. Rochester
Dodge, F. A. LeSueur
Dohm, A. J. St. Paul
Dolan, C. P. Worthington
Dolder, F. C. Eyota
Doms, H. C. Slayton
Doms, Wm. Woodstock
Donohue, P. F. St. Paul
Doolittle, L. E. Duluth
Dorge, Richard I. Minneapolis
Doxey, G. L. Minneapolis
Doyle, J. B. Rochester
Drake, Carl B. St. Paul
Drake, C. R. Minneapolis
Drake, F. A. Lanesboro
Dredge, H. P. Sandstone
Dreisbach, N. Minneapolis
Drenning, F. C. Duluth
Drips, D. G. Rochester
Drought, W. W. Fergus Falls
Dubbe, F. H. New Ulm
DuBois, J. A. Sauk Center
DuBois, J. F. Sauk Center
Dudley, J. H. Windom
Dulude, S. Dassel
Duncan, Henry Marietta
Dungay, Neil S. Northfield
Dunlap, E. H. Minneapolis
Dunlap, H. F. Rochester
Dunlop, Alex Crookston
Dunn, Geo. R. Minneapolis
Dunn, Halbert L. Baltimore, Md.
Dunn, J. N. St. Paul
Dunn, Louis Minneapolis
Dunne, Gerald P. St. Paul
Dunsmoor, F. A. Minneapolis
Dutton, C. E. Minneapolis
Dworsky, Samuel D. Minneapolis

Earl, George A. St. Paul
Earl, Robert O. St. Paul
Eberlin, E. A. Glenwood
Eby, C. B. Spring Valley
Eckman, P. F. Duluth
Eckstein, A. W. Comfrey
Edlund, G. St. Paul
Edstrom, Henry Crookston
Edwards, Ralph T. Elysian
Egilsrud, Kristian Minneapolis
Ehrenberg, C. J. Minneapolis
Eirley, Clara S. Y. Mt. Pleasant, Ia.
Eisenman, W. G. Chisholm
Eisenstadt, David H. Minneapolis
Eitel, Geo. D. Minneapolis
Eitel, G. G. Minneapolis
Ekblad, J. W. Duluth
Eklund, E. J. Norwood
Eklund, Wm. J. Duluth
Elias, F. J. Duluth
Ellingson, A. R. Detroit Lakes
Ellison, David E. Minneapolis
Ellison, Frank E. Monticello
Elsey, J. R. Glenwood
Ely, O. S. South St. Paul
Emerson, E. C. St. Paul
Empie, W. M. Virginia
Endress, E. K. St. Paul
Engberg, E. J. St. Paul
Engelhart, P. C. Minneapolis
Engh, Sigfred Cottonwood
Eppard, R. M. Cloquet
Erb, F. A. Minneapolis
Erdmann, C. A. Minneapolis
Erickson, J. L. Twin Valley
Ericson, J. G. Minneapolis
Ericson, Swan Le Sueur
Ernest, G. C. St. Paul
Ertel, E. Q. Ellendale
Eshelby, E. C. St. Paul
Eskew, Don C. Rochester
Esser, John Perham
Estrem, C. O. Fergus Falls
Estrem, T. A. Hibbing
Etheredge, Shuler H. Rochester
Eusterman, G. B. Rochester
Evarts, Arrah B. Rochester
Everlof, J. L. Minneapolis
Ewens, H. B. Virginia
Ewing, C. F. Wheaton

Fahey, E. W. St. Paul
Fansler, W. A. Minneapolis
Farr, R. E. Minneapolis
Farrell, J. C. Arlington
Farrish, R. C. Sherburn
Faust, Louis S. Rochester
Fawcett, C. E. Stewartville
Feeney, John M. Minneapolis
Fehland, Harold R. Rochester
Ferguson, J. C. St. Paul
Ferreira, G. J. Aurora
Fesler, Harold H. St. Paul
Figi, F. A. Rochester
Fiksdal, M. J. Willmar
Fink, Walter H. Minneapolis
Finney, W. P., Jr. Rochester
Fisch, Herbert W. Austin
Fischer, G. Minneapolis
Fischer, H. P. Shakopee
Fischer, Mario McC. Duluth
Fischer, P. M. Shakopee
Fishback, Frederick C. Rochester
Fitzgerald, E. T. Morris
Fjeldstad, C. A. Minneapolis
Flagstad, A. E. St. Paul
Flancher, Leon H. Lake Park
Fleischbauer, D. S. Wabasha
Fleming, A. S. Minneapolis
Fleming, James Cloquet
Fleming, T. N. St. Cloud
Flinn, B. P. Redwood Falls
Flinn, T. E. Redwood Falls
Flocken, Chas. F. Minneapolis
Flom, A. O. Chisago City
Flores, O. T. Dodge Center
Flothow, Paul G. Rochester
Flower, W. Z. Minneapolis
Fogarty, Chas. W. St. Paul
Foley, F. E. B. St. Paul
Folken, F. G. Albert Lea
Forbes, R. S. Duluth
Ford, Burton C. Marshall
Ford, Frances A. Rochester
Forrest, C. G. Clearbrook
Fortin, Harry J. Rochester

Foshager, Henry T.....Clara City
Fowler, L. H.....Minneapolis
Fox, John M.....Minneapolis
Franchere, F. W.....Lake Crystal
Francis, David W.....Morristown
Franzen, H. G.....Minneapolis
Frederickson, Clyde H.....Rochester
Freeborn, J. A.....Fergus Falls
Freed, O. J. R.....Cokato
Freeman, C. D.....St. Paul
Freeman, G. H.....St. Peter
Freeman, J. P.....Albert Lea
Freeman, W. L.....St. Cloud
Freligh, W. P.....Albert Lea
French, H. S.....New London
Freymiller, E. F.....Markville
Fried, Louis A.....Fosston
Friedell, A.....Minneapolis
Friesleben, Wm.....Sauk Rapids
Fritsche, Albert.....New Ulm
Fritsche, L. A.....New Ulm
Froelich, H. W.....Thief River Falls
Frost, E. H.....Willmar
Frudenfeld, H. H.....Minneapolis
Fuerste, Frederick.....Proctor
Fugina, George R.....Mankato
Fulton, J. F.....St. Paul

Gaarde, F. W.....Rochester
Gager, E. C.....St. Paul
Gaines, E. C.....Buffalo Lake
Gamble, J. W.....Albert Lea
Gamble, P. M.....Albert Lea
Gamble, R. M.....Albert Lea
Gammell, J. H.....Minneapolis
Garand, J. H.....Dayton
Garbrecht, Arthur.....St. Paul
Gardiner, D. G.....St. Paul
Gardner, Edwin L.....Minneapolis
Gardner, R. D.....Eveleth
Gardner, V. H.....Fairmont
Garlock, A. V.....Bemidji
Garlock, Dewitt H.....Bemidji
Gates, C. E.....Anoka
Gault, C. C.....Owatonna
Gauthier, W. L.....Virginia
Gay, James G.....Rochester
Geer, Everett K.....St. Paul
Gehlen, J. N.....St. Paul
Geissenger, John D.....St. Paul
Geist, Emil S.....Minneapolis
Geist, George A.....St. Paul
Gelz, J. J.....St. Cloud
Gerber, Milo P.....Brainerd
Germo, Chas.....Balaton
Ghent, C. Harry.....St. Paul
Ghent, M. M.....St. Paul
Ghostley, Mary C.....International Falls
Gibbon, L. L.....Lowry
Giere, E. O.....St. Paul
Giessler, Paul W.....Minneapolis
Giffin, H. Z.....Rochester
Gilfillan, J. S.....St. Paul
Gilkinson, A. J.....Osakis
Gillespie, M. G.....Duluth
Gillespie, N. H.....Duluth
Gingold, Benjamin A.....Minneapolis
Ginsberg, Wm.....St. Paul
Giroux, A. A.....Duluth
Gleason, Notery A.....Rochester
Goeckerman, W. H.....Rochester
Goehrs, H. W.....St. Cloud
Goldberg, Isadore M.....Minneapolis
Golden, C. M.....Tyler
Goltz, E. V.....St. Paul
Goodheart, C. J.....Akely
Goodson, Catherine M.....Retreat, Pa.
Gorder, Arne C.....Rochester
Gordon, Geo. J.....Minneapolis
Gosin, D. F.....Minneapolis
Gosslee, G. L.....Moorhead
Gowan, L. R.....Duluth
Graham, David.....Duluth
Graham, R. D.....Duluth
Graham, Robert.....Duluth
Gratzek, Thos.....St. Paul
Grave, Floyd.....Minneapolis
Grawn, F. A.....Duluth
Gray, F. D.....Marshall
Gray, Royal C.....Cook
Greeley, L. Q.....Duluth
Green, E. K.....Minneapolis
Green, George F.....Rochester
Greene, Carl H.....Rochester
Greene, Charles L.....St. Paul
Greene, Earle I.....Rochester
Greene, W. P.....Minneapolis
Greenlee, Daniel P.....Rochester
Greisheimer, Esther M.....Minneapolis
Griffin, P. J.....Fertile
Grimes, H. B.....Madelia
Grinnell, W. B.....Preston
Grise, W. B.....Austin

Groebbner, O. A.....Cold Spring
Ground, H. T.....Virginia
Gruenhagen, Arnold P.....St. Paul
Gullixson, A.....Albert Lea
Gunderson, Harley J.....Minneapolis
Gunderson, Nels A.....Minneapolis
Guyer, L. G.....St. Paul

Habein, Harold C.....Rochester
Haberman, E.....Osakis
Hacking, Frank H.....Minneapolis
Haessley, S. B.....Faribault
Hagaman, Geo. K.....St. Paul
Hagen, G. L.....Minneapolis
Hagen, H. O.....New Richland
Hagen, O. E.....Butterfield
Hagen, Olaf J.....Moorhead
Hager, Benjamin H.....Rochester
Haggard, G. D.....Minneapolis
Haines, J. H.....Stillwater
Haines, S. F.....Rochester
Haldeman, Keene O.....Rochester
Hall, Andrea E.....Virginia
Hall, A. R.....St. Paul
Hall, E. L.....Princeton
Hall, J. M.....Minneapolis
Hall, P. M.....Ah-Gwah-Ching
Hall, S. S.....Minneapolis
Hallberg, C. A.....Minneapolis
Hallenbeck, D. F.....Rochester
Halloran, Walter.....Jackson
Halper, Philip.....St. Paul
Hamel, Arnold L.....Minneapolis
Hamilton, A. S.....Minneapolis
Hamlin, George B.....Minneapolis
Hammermeister, Theodore F.....New Ulm
Hammes, E. M.....St. Paul
Hammond, A. J.....Minneapolis
Hammond, J. F.....St. Paul
Hamrick, Robert A.....Rochester
Hand, John R.....Rochester
Hand, W. R.....Elbow Lake
Hane, Richard L.....Rochester
Haney, C. L.....Duluth
Hanlon, Frank R.....Rochester
Hansen, Elmer H.....Minneapolis
Hansen, Erling.....Minneapolis
Hansen, Olga S.....Minneapolis
Hanson, A. M.....Faribault
Hanson, H. J.....Minneapolis
Hanson, H. V.....Minneapolis
Hare, E. R.....Minneapolis
Hargis, Estes H.....Rochester
Harmon, G. E.....St. Paul
Harriman, L.....Howard Lake
Harrington, C. D.....Minneapolis
Harrington, Ethel R.....Rochester
Harrington, F. E.....Minneapolis
Harrington, S. W.....Rochester
Harris, C. N.....Chisholm
Harrison, E. E.....West Concord
Harshbarger, Isaac L.....Rochester
Hart, A. B.....Owatonna
Hart, Alfred B., Jr.....Owatonna
Hartley, E. C.....St. Paul
Hartman, H. R.....Rochester
Hartzell, Thos. B.....Minneapolis
Haskell, A. D.....Alexandria
Hassett, Roger G.....Bird Island
Hastings, D. R.....Minneapolis
Hatch, W. E.....Duluth
Hauge, M. M.....Clarkfield
Hauser, Emil D.....Rochester
Hauser, V. P.....St. Paul
Havens, Fred Z.....Rochester
Haverfield, Addie R.....Minneapolis
Hawkins, V. J.....St. Paul
Hawkinson, L. F.....Brainerd
Hayes, J. M.....Minneapolis
Hayes, M. F.....Nashwauk
Head, G. D.....Minneapolis
Heagerty, W. B.....Faribault
Healy, R. T.....Pierz
Hearn, Wm. O.....Minneapolis
Heath, A. C.....St. Paul
Hebeisen, M. B.....Carver
Heck, Frank J.....Rochester
Heck, Wm. W.....St. Paul
Hedback, A. E.....Minneapolis
Hedenstrom, F. G.....St. Paul
Hedenstrom, L. H.....Cambridge
Heetderks, D. R.....Rochester
Hefke, Hans W.....St. James
Hegge, C. A.....Austin
Hegge, O. H.....Austin
Heiberg, E. A.....Fergus Falls
Heim, Russell R.....Minneapolis
Heimark, J. H.....Moorhead
Heimark, O. E.....Duluth
Heise, W. F. C.....Winona
Helk, H. H.....Minneapolis
Helland, G. M.....Spring Grove
Helland, J. W.....Spring Grove

Helmholz, H. F.....Rochester
Hempstead, B. E.....Rochester
Hemstead, Werner.....St. Cloud
Hench, Philip S.....Rochester
Henderson, A. J.....Kiester
Henderson, Earl F.....Rochester
Henderson, M. S.....Rochester
Hendrickson, J. F.....Minneapolis
Hengstler, W. H.....St. Paul
Henney, Wm. H.....McIntosh
Henriksen, H. G.....Elko
Henry, C. E.....Minneapolis
Henry, Myron O.....Minneapolis
Hensel, C. N.....St. Paul
Henslin, A. E.....Le Roy
Herbst, Wm. P.....Minneapolis
Herman, Arthur L.....Minneapolis
Hermanson, Peter E.....Ivanhoe
Herrmann, Edgar T.....St. Paul
Herrmann, S. F.....Rochester
Hertel, G. E.....Austin
Hesselgrave, S. S.....St. Paul
Heyerdale, O. C.....Rochester
Hiebert, J. P.....Minneapolis
Higbee, Paul A.....Minneapolis
Higgins, J. H.....Minneapolis
Hilbert, Eunice.....Minneapolis
Hilger, A. W.....St. Paul
Hilger, D. D.....St. Paul
Hilger, J. M.....Iona
Hilger, L. A.....St. Paul
Hill, Eleanor J.....Minneapolis
Hill, Frederick E.....Duluth
Hirschboeck, F. J.....Duluth
Hirschfelder, A. D.....Minneapolis
Hirschfield, M. S.....Duluth
Hirshfield, F. R.....Minneapolis
Hitchings, W. S.....Lakefield
Hoaglund, A. W.....Minneapolis
Hobbs, C. A.....Minneapolis
Hochfilzer, J. J.....St. Paul
Hodapp, R. J.....Willmar
Hodge, S. V.....Minneapolis
Hodgson, H. H.....Crookston
Hoff, Alfred.....St. Paul
Hoff, Peder A.....St. Paul
Hoffman, Max H.....St. Paul
Hoidale, A. D.....Tracy
Hoiland, A. S.....Minneapolis
Holbrook, J. S.....Mankato
Holcomb, J. T.....St. Paul
Holcomb, O. W.....St. Paul
Holdridge, Geo.....Foley
Holen, T.....Minneapolis
Holl, P. M.....Minneapolis
Hollands, W. H.....Fisher
Holloway, Jackson K.....Rochester
Holm, Geo. A.....Minneapolis
Holm, H. H.....Glencoe
Holm, P. F.....Wells
Holman, C. J.....Mankato
Holmberg, L. J.....Canby
Holmes, A. E.....Rush City
Holmes, W. B.....Ada
Holst, C. F.....Little Falls
Holst, J. B.....Little Falls
Holt, Wm. B.....Minneapolis
Holtan, Theodore.....Waterville
Holte, H.....Crookston
Horton, Bayard T.....Rochester
Horwitz, Alec.....Rochester
House, Z. E.....Cass Lake
Houston, C. A.....Park Rapids
Hovde, H.....Duluth
Hovde, Rolf.....Winthrop
Howard, Merrill A.....St. Paul
Howard, M. I.....Mankato
Howard, W. S.....St. Paul
Howard, William H.....Minneapolis
Huenekens, E. J.....Minneapolis
Huffman, Lester D.....Rochester
Hufford, Alvin R.....Rochester
Hughes, Louis D.....Minneapolis
Hullsiek, H. E.....St. Paul
Hultkrans, Joel C.....St. Paul
Hultkrans, R. E.....Rush City
Humphrey, E. W.....Moorhead
Humphrey, W. R.....Stillwater
Hunt, F. N.....Fairmont
Hunt, H. E.....St. Paul
Hunt, R. C.....Fairmont
Hunt, V. C.....Rochester
Hunte, A. F.....Truman
Hursh, M. M.....Grand Rapids
Hutchinson, Chas. J.....Minneapolis
Huxley, F. R.....Faribault
Hynes, James.....Minneapolis
Hynes, John E.....Minneapolis

Ide, A. W.....St. Paul
Ikeda, Kano.....Minneapolis
Ingerson, C. A.....St. Paul
Irvine, H. G.....Minneapolis

Jackson, C. M.....Minneapolis
Jacobs, Jno. C.....Willmar
Jacobs, Minerd F.....Rochester
Jacquot, G. L.....Tyler
Jamieson, Earl.....Walnut Grove
Jennings, Mary H.....Minneapolis
Jensen, Harry.....Minneapolis
Jensen, J. C.....Hendricks
Jensen, Louis C.....Minneapolis
Jensen, M. J.....Minneapolis
Jensen, T. J.....Duluth
Jenson, A. H.....Hutchinson
Jepson, P. N.....Boston, Mass.
Johnson, A. E.....Minneapolis
Johnson, A. E.....Red Wing
Johnson, A. Elof.....Minneapolis
Johnson, Asa M.....St. Paul
Johnson, C. M.....Dawson
Johnson, E. W.....Bemidji
Johnson, Ellsworth.....Windom
Johnson, Hans.....Kerkhoven
Johnson, Hartland C.....St. Paul
Johnson, H. M.....Dawson
Johnson, H. P.....Fairmont
Johnson, James A.....Minneapolis
Johnson, Julius.....Minneapolis
Johnson, Nimrod A.....Minneapolis
Johnson, O. F.....St. Paul
Johnson, Odin J.....Minneapolis
Johnson, R. A.....Minneapolis
Johnson, Ray G.....St. Paul
Johnson, Selmer M.....Minneapolis
Johnson, T. H.....St. Paul
Johnson, Walfred.....Sauk Center
Johnson, Walter R.....Rochester
Jones, A. W.....Red Wing
Jones, D. C.....St. Paul
Jones, E. M.....St. Paul
Jones, G. M.....Minneapolis
Jones, H. T.....Rochester
Jones, H. W.....Minneapolis
Jones, Richard N.....Richmond
Jones, Robert D.....Rochester
Jones, W. A.....Minneapolis
Jordan, Elverse M.....Rochester
Jordan, Ferdinand M.....Rochester
Josewich, Alexander.....Minneapolis
Josewski, R. J.....Stillwater
Joyce, G. T.....Rochester
Judd, E. S.....Rochester
Judge, Walter T.....Graceville
Juergens, H. M.....Belle Plaine
Juliar, R. O.....St. Clair

Kaasa, L. J.....Albert Lea
Kadesky, David.....St. Paul
Kahala, Arthur.....Crookston
Kalinoff, D.....Stillwater
Kamman, Gordon R.....St. Paul
Kamp, B. A.....Albert Lea
Kannary, E. L.....St. Paul
Kanne, C. W.....Faribault
Karn, B. R.....Ortonville
Kaufman, A. J.....Franklin
Kaufman, Wm. C.....Appleton
Kean, N. D.....Coleraine
Keith, N. M.....Rochester
Kelling, Louis F.....Lakefield
Kelly, B. W.....Aitkin
Kelly, John V.....St. Paul
Kelly, Paul H.....St. Paul
Kelly, Thomas C.....Mankato
Kelsey, C. G.....Hinckley
Kemp, A. F.....Mankato
Kennedy, C. C.....Minneapolis
Kennedy, Jane F.....Minneapolis
Kennedy, R. Roy.....Minneapolis
Kennedy, Roger L. J.....Rochester
Kennedy, W. A.....St. Paul
Kenny, H. F.....St. Paul
Kenyon, Paul.....Wadena
Kepler, Edwin J.....Rochester
Kepler, Helen M.....Rochester
Kerlan, M.....Moose Lake
Kerlan, S. Z.....Aitkin
Kern, M. J.....St. Cloud
Kernohan, James W.....Rochester
Kestel, John L.....Rochester
Kesting, Herman.....St. Paul
Keyes, C. R.....Duluth
Keyes, E. D.....Winona
Kibbe, O. A.....Minneapolis
Kiefer, M. A.....Sleepy Eye
Kierland, P. E.....Alexandria
Kiesling, I. H.....Nashwauk
Kilbourne, A. F.....Rochester
Kilbride, J. S.....Canby
Killins, Wendell A.....Rochester
Kimball, H. H.....Minneapolis
King, E. A.....Minneapolis
King, George L.....St. Paul
King, W. R.....Minneapolis
King, W. S.....Eveleth
King, Z. P.....St. Paul
Kingsbury, E. M.....Clearwater
Kinsella, Thomas J.....Oak Terrace
Kirk, G. P.....East Grand Forks
Kistler, A. S.....St. Paul
Kistler, C. M.....Minneapolis
Kittelson, Olaf.....Minneapolis
Kittelson, T. N.....Fergus Falls
Kjelland, J. S.....East Ellsworth, Wis.
Klaveness, E.....Monticello
Klein, Harry.....Duluth
Klein, H. N.....St. Paul
Kleinheksel, John L.....Rochester
Klima, W. W.....Stewart
Kliman, Frank E.....Duluth
Knapp, F. N.....Duluth
Knauff, M. K.....St. Paul
Knight, H. L.....Minneapolis
Knight, Ralph T.....Minneapolis
Knight, Ray R.....Minneapolis
Knudtson, H. M.....Browerville
Kohlbry, C. O.....Duluth
Kohler, D. W.....St. Joseph
Kohler, F. G.....Minneapolis
Kohler, G. A.....Minneapolis
Koller, Herman M.....Minneapolis
Koller, L. R.....Minneapolis
Kolset, Carl D.....Sanborn
Kooiker, Herman J.....Albert Lea
Korth, Zeno N.....Rochester
Kraft, Peter.....Duluth
Kremer, Walter J.....Minneapolis
Kretzschmar, Karl E.....Los Angeles, Cal.
Kriedt, Daniel.....Minneapolis
Kucera, Frank J.....Hopkins
Kucera, Wm. J.....Minneapolis
Kuhlman, Aug.....Melrose
Kusske, A. L.....New Ulm
Kuth, J. R.....Duluth
Kvitrud, G.....Minneapolis

Laird, A. T.....Nopeming
Lajoie, John M.....Minneapolis
Landeen, F. G.....Stillwater
Laney, R. L.....Puposky
Langenderfer, F. V.....St. Paul
Langhoff, A. H.....Glencoe
Lannin, J. C.....Mabel
Lapierre, A. P.....Minneapolis
Lapierre, C. A.....Minneapolis
Lapp, Victor R.....Rochester
Larsen, C. L.....St. Paul
Larson, A. L.....Fertile
Larson, M. L.....St. Paul
Larson, O. O.....Detroit Lakes
Latchford, James K.....Rochester
Laughlin, J. T.....Grey Eagle
Laurent, A. A.....Minneapolis
LaVake, R. T.....Minneapolis
Law, A. A.....Minneapolis
Lax, Morris H.....St. Paul
Leahy, Bartholomew.....St. Paul
Leavenworth, Richard O.....St. Paul
Leavitt, H. H.....Minneapolis
Lebowski, Joseph A.....Minneapolis
Leck, Clifford C.....Austin
LeClerc, J. E.....Le Sueur
Leddy, Eugene T.....Rochester
Lee, H. M.....Minneapolis
Lee, W. A.....Fergus Falls
Lee, W. P.....Northfield
Lee, Walter N.....Madison
Leebens, J. H.....Lismore
Leibold, H. H.....Parkers Prairie
Leicht, O.....Winona
Leitch, Archibald.....St. Paul
Leitch, N. M.....Hallock
Leland, John T.....Herman
Leland, M. N.....Minneapolis
Lemon, W. S.....Rochester
Lemstrom, Jarl.....Minneapolis
Lenont, C. B.....Virgina
Leonard, L. J.....Minneapolis
Leopard, B. A.....New Richland
Lepak, F. J.....Duluth
Lepak, John A.....St. Paul
Lerche, William.....St. Paul
Leuty, Amos.....Morris
Lewis, A. J.....Henning
Lewis, C. B.....St. Cloud
Lewis, Charles F.....Austin
Lewis, J. B.....South St. Paul
Lewis, W. W.....St. Paul
Lexa, F. J.....Lonsdale
Libert, John N.....St. Cloud
Lichtenstein, H.....Winona
Lick, C. Louis.....St. Paul
Liedloff, A. G.....Mankato
Lillie, H. I.....Rochester
Lillie, W. I.....Rochester
Lima, Ludvig.....Montevideo

Lind, C. J.....Minneapolis
Lindberg, A. L.....Wheaton
Linde, Herman.....Cyrus
Lindgren, E. I.....Duluth
Lindquist, R. H.....Minneapolis
Lindsay, W. V.....Winona
Lindsey, Maude L.....Rochester
Linner, H. P.....Minneapolis
Linton, W. B.....Rochester
Lippman, Hyman S.....Minneapolis
List, Walter E.....Minneapolis
Litchfield, John T.....Minneapolis
Litman, Samuel N.....Duluth
Little, D. W.....Appleton
Little, W. J.....St. Paul
Litzenberg, J. C.....Minneapolis
Lloyd, H. J.....Mankato
Locken, O. E.....Crookston
Logan, A. H.....Rochester
Logan, F. W.....Blue Earth
Logefeil, Rudolph C.....Minneapolis
Lommen, P. A.....Austin
Loofbourrow, Elias H.....Keewatin
Loomis, E. A.....Minneapolis
Love, Fred A.....Carlos
Lowe, Earl R.....South St. Paul
Lowe, Thos.....Pipestone
Luden, Georgine.....Rochester
Luedtke, G. H.....Fairmont
Lum, C. E.....Duluth
Lund, Arthur E.....St. Paul
Lundgren, A. C.....Minneapolis
Lundholm, A. M.....St. Paul
Lundy, John S.....Rochester
Lyman, F. V.....Grove City
Lynch, M. J.....Minneapolis
Lyng, John A.....Minneapolis
Lyon, E. P.....Minneapolis
Lyon, J. D.....Minneapolis
Lysne, Henry.....Minneapolis

McAdory, R. J.....Minneapolis
McBeath, Ewing C.....St. Paul
McBroom, D. E.....Faribault
McCarthy, Donald.....Minneapolis
McCarthy, W. J.....Madelia
McCarthy, W. R.....St. Paul
McCartney, James S.....Minneapolis
McCarty, P. D.....Ely
McClanahan, J. H.....White Bear Lake
McClanahan, T. S.....White Bear Lake
McCloud, C. N.....St. Paul
McComb, C. F.....Duluth
McCoy, Mary.....Duluth
McCrea, James.....Fulda
McDaniel, Orianna.....Minneapolis
McDaniel, S. P.....Mountain Iron
McDonald, A. L.....Duluth
McDonell, C. H.....Winona
McDowell, J. P.....St. Cloud
McEachran, A.....Minneapolis
McFarland, A. H.....Minneapolis
McGandy, R. F.....Minneapolis
McGeary, Geo. E.....Minneapolis
McGiffert, E. N.....Duluth
McGroarity, J. J.....Easton
McGuigan, H. T.....Red Wing
McHaffie, O. L.....Duluth
McHugh, Roderick F.....Aitkin
McIntire, H. M.....Waseca
McIntyre, E. H.....Virginia
McIntyre, Geo.....Minneapolis
McIntyre, John A.....Owatonna
McKaig, Carle B.....Pine Island
McKeithen, A. M.....Rochester
McKenna, J. K.....Austin
McKeon, James.....St. Paul
McKeon, J. O.....St. Paul
McKeown, E. G.....Pipestone
McKibben, H. E.....St. Cloud
McKinlay, C. A.....Minneapolis
McKinley, J. C.....Minneapolis
McKinney, F. S.....Minneapolis
McKinnon, J. J.....Wadena
McLaren, Jeanette M.....St. Paul
McLaughlin, E. M.....Winona
McMurtry, Walter C.....Virginia
McNaugher, William McM.....Rochester
McNevin, C. F.....St. Paul
McNutt, John R.....Two Harbors
McPheeters, H. O.....Minneapols
McQuiggan, Mark R.....Rochester
McVicar, Chas. S.....Rochester
MacDonald, A. E.....Minneapolis
MacDonald, D. A.....Minneapolis
MacDonald, Irving C.....Minneapolis
MacRae, Gordon C.....Duluth
Macbeth, J. L.....St. Clair
Mach, Frank B.....Minneapolis
Macnie, J. S.....Minneapolis
Madden, John F.....Gibbon
Maertz, W. F.....New Prague

Magath, T. B.....Rochester
Magie, W. H.....Duluth
Magney, F. H.....Duluth
Mahwald, A.....Albany
Maland, C. O.....Minneapolis
Manley, J. R.....Duluth
Mann, A. T.....Minneapolis
Manson, F. M.....Worthington
Marcley, W. J.....Minneapolis
Marcum, E. H.....Bemidji
Mariette, Ernest.....Oak Terrace
Mark, D. B.....Minneapolis
Marken, M. H.....Fairmont
Martin, Clement L.....Rochester
Martineau, J. L.....St. Paul
Masson, D. M.....Rochester
Masson, J. C.....Rochester
Matthews, Justus.....Minneapolis
Mattill, P. M.....Oak Terrace
Maxeiner, Stanley R.....Minneapolis
May, James A.....Rochester
May, W. H.....Minneapolis
Mayland, M. L.....Faribault
Mayo, C. H.....Rochester
Mayo, W. J.....Rochester
Maytum, Charles K.....Rochester
Mead, Marion A.....Minneapolis
Meckstroth, C. W.....Brandon
Mee, P. H.....Osseo
Meierding, Wm. A.....New Ulm
Meilicke, W. A.....Nicollet
Meland, Ernest.....Dalton
Melby, Benedik.....Blooming Prairie
Mellby, O. F.....Thief River Falls
Melzer, G. R.....Lyle
Meng, Eleanor L.....Fergus Falls
Meng, Wm. L.....Fergus Falls
Merkert, Charles E.....Minneapolis
Merkert, G. L.....Minneapolis
Merriman, L. L.....Duluth
Mesker, G. H.....Olivia
Metcalf, F. W.....Fulda
Meyer, A. A.....Melrose
Meyer, E. L.....Minneapolis
Meyer, P. F.....Faribault
Meyerding, E. A.....St. Paul
Meyerding, H. W.....Rochester
Michael, J. C.....Minneapolis
Michelson, H. E.....Minneapolis
Milan, M. Geo.....Warren
Miller, F. C.....Minneapolis
Miller, H. A.....Waseca
Miller, V. I.....Mankato
Miller, W. A.....New York Mills
Mills, J. L.....Winnebago
Mills, Ralph G.....Rochester
Mitchell, A. B.....Hector
Mitchell, Frederick.....St. Paul
Mitchell, R. S.....Grand Meadow
Moench, L. Mary.....Rochester
Moersch, F. P.....Rochester
Moersch, H. J.....Rochester
Moffatt, A. G.....Howard Lake
Mogilner, S. N.....St. Paul
Moir, Wm. W.....Minneapolis
Molander, H. A.....St. Paul
Moloney, G. R.....Belle Plaine
Monahan, R. H.....Minneapolis
Montgomery, Hamilton.....Rochester
Moore, A. B.....Rochester
Moorhead, M. B.....Minneapolis
Moquin, Marie A.....St. Paul
Morcom, H. W.....Duluth
More, C. W.....Eveleth
Moren, Edwin.....Minneapolis
Mork, B. O.....Worthington
Morley, G. A.....Crookston
Morrison, A. W.....Minneapolis
Morrissey, F. B.....St. Paul
Morrow, James J.....Austin
Morse, M. P.....LeRoy
Morsman, L. W.....Hibbing
Morss, C. R.....Zumbrota
Mortenson, N. G.....St. Paul
Morton, Chas. B.....Rochester
Moses, Joseph, Jr.....Northfield
Moskovitz, Selic.....St. Paul
Moss, Myer N.....St. Paul
Moyer, Ralph E.....Bemidji
Moynihan, A. F.....Sauk Center
Moynihan, T. J.....St. Paul
Muller, R. Theo.....St. Paul
Murphy, E. F.....St. Paul
Murphy, Ignatius.....Minneapolis
Murray, D. D.....Duluth
Mussey, R. D.....Rochester
Myers, J. A.....Minneapolis
Myers, Thos.....St. Paul
Myre, C. R.....Paynesville

Naegeli, Frank.....Fergus Falls
Nagel, G. W.....Rochester
Nagel, H. D.....Waconia
Nannestad, J. R.....Albert Lea
Nass, H. A.....Mabel
Nathanson, M. H.....Minneapolis
Nauth, W. W.....Winona
Neher, F. H.....St. Paul
Nelson, C. P.....Minneapolis
Nelson, E. H.....Chisholm
Nelson, Ernest J.....Owatonna
Nelson, H. E.....Crookston
Nelson, H. S.....Minneapolis
Nelson, L. A.....St. Paul
Nelson, Marque O.....Rochester
Nelson, M. S.....Granite Falls
Nelson, Nesmith.....Brainerd
Nelson, O. E.....Minneapolis
Nelson, O. N.....Battle Lake
Nerad, Anton H.....Argyle
Nesbit, Harold T.....St. Paul
Neumann, C. A.....Lewiston
New, G. B.....Rochester
Newhart, Horace.....Minneapolis
Nichols, A. F.....St. Paul
Nicholson, M. A.....Duluth
Nickel, Allen A. C.....Rochester
Nippert, H. T.....St. Paul
Nippert, L. A.....Minneapolis
Nomland, Ruben.....Brainerd
Nootnagel, C. F.....Minneapolis
Noran, A. N.....Minneapolis
Nordin, C. G.....St. Paul
Nordin, G. T.....Minneapolis
Nordland, Martin.....Minneapolis
Norman, J. F.....Crookston
Norrgard, H. T.....Milaca
Norris, Edgar H.....St. Paul
Norris, G. H.....Annandale
Norris, J. F.....St. Peter
Noth, H. W.....Minneapolis
Novak, E. E.....New Prague
Nunn, Leslie L.....Eveleth
Nye, Katherine A.....St. Paul
Nye, Lillian L.....St. Paul

O'Brien, H. J.....St. Paul
O'Connor, I. A.....St. Paul
O'Connor, J. P.....St. Paul
O'Connor, Patrick H.....Amboy
O'Donnell, D. M.....Ortonville
O'Donnell, J. E.....Minneapolis
O'Hara, J. J.....Janesville
O'Leary, P. A.....Rochester
Oberg, C. M.....Minneapolis
Ochsenhirt, Norman C.....Rochester
Oerting, Harry.....St. Paul
Offutt, Susan R.....Rochester
Ogden, Warner.....St. Paul
Ohage, Justus.....St. Paul
Ohage, Justus, Jr.....St. Paul
Ohlinger, L. B.....Rochester
Ohnstad, J. L.....McIntosh
Oliver, C. I.....Graceville
Olson, Albert E.....Duluth
Olson, Chas. A.....St. Paul
Olson, Chester J.....Belle Plaine
Olson, Ernest A.....Pine Island
Olson, F. A.....Minneapolis
Olson, G. M.....Minneapolis
Olson, Olaf A.....Minneapolis
Olson, R. G.....Minneapolis
Olson, W. P.....Gaylord
Omohundro, Miles P.....Rochester
Onsgard, C. K.....Halstad
Onsgard, L. K.....Houston
Opheim, O. V.....Starbuck
Oppegaard, C. L.....Crookston
Oppegaard, M. O.....Crookston
Oredson, O. A.....Duluth
Orlob, W. M.....Renville
Ortman, John W.....Pierz
Osborn, Lida.....Mankato
Osburn, B. F.....International Falls
Ostergren, E. W.....St. Paul
Otto, H. C.....Frazee
Overend, K. V.....Hallock
Owre, Oscar.....Minneapolis

Pake, S. G.....Duluth
Palmer, C. F.....Albert Lea
Palmer, R. N.....Lanesboro
Palmer, W. L.....Albert Lea
Pardee, Katherine.....Northampton, Mass.
Parker, H. L.....Rochester
Parker, J. William.....Rochester
Parker, O. W.....Ely
Parks, A. H.....Minneapolis
Parson, L. R.....Elbow Lake
Parsons, Eloise.....Rochester
Passer, A. A.....Olivia
Patterson, W. E.....Minneapolis
Patterson, W. E.....Westbrook
Patterson, W. L.....Fergus Falls
Paul, L. W.....Canby
Paulsen, E. L.....Minneapolis
Paulson, C. W.....North Branch
Paulson, G. A.....Duluth
Paulson, T. S.....Fergus Falls
Payette, C. H.....Duluth
Pearce, N. O.....Minneapolis
Pearson, F. R.....St. Paul
Pearson, William T.....Russell
Pedersen, A. H.....St. Paul
Pederson, Harold.....Minneapolis
Pederson, O. J.....Hanska
Pederson, R. M.....Minneapolis
Pemberton, J. deJ.....Rochester
Pengelly, E. J.....Crosby
Penhall, F. W.....Morton
Pennie, D. F.....Duluth
Penny, L. E.....St. Paul
Peppard, T. A.....Minneapolis
Perley, A. E.....Chisholm
Perry, C. G.....St. Paul
Perry, Ralph St. J.....Minneapolis
Persons, C. E.....Marshall
Peters, R. M.....Minneapolis
Petersen, J. R.....Minneapolis
Petersen, Thorvald.....Minneapolis
Peterson, Alfred.....Dassel
Peterson, A. A.....Mora
Peterson, Christian.....Owatonna
Peterson, Edward.....Buhl
Peterson, H. E.....Granite Falls
Peterson, O. H.....Minneapolis
Peterson, O. I.....Cokato
Peterson, R. A.....Vesta
Peterson, V. N.....St. Paul
Peterson, Willard C.....Minneapolis
Pettit, C. W.....Minneapolis
Pfaff, E. K.....Shoals, Indiana
Phelps, Alvah G.....Ogilvie
Phelps, Kenneth A.....Minneapolis
Phillips, A. E.....Delano
Phillips, W. H.....Jordan
Pierce, Chas. H.....Wadena
Pierson, Claude M.....Wheaton
Piper, M. C.....Rochester
Piper, Wm. A.....Mountain Lake
Plankers, A. G.....Dubuque, Iowa
Platou, E. S.....Minneapolis
Plondke, F. J.....St. Paul
Plonske, C. J.....Faribault
Plummer, H. S.....Rochester
Plummer, W. A.....Rochester
Poehler, F. T.....Minneapolis
Poirier, J. A.....Forest Lake
Pollock, L. W.....Rochester
Polzak, Jacob A.....Minneapolis
Poppe, Fred H.....Minneapolis
Power, J. E.....Duluth
Powers, F. W.....Barrett
Prangen, A. D.....Rochester
Pratt, Fred J.....Minneapolis
Pratt, J. A.....Minneapolis
Preine, I. A.....Minneapolis
Prendergast, H. J.....St. Paul
Prickman, Louis E.....Rochester
Prim, J. A.....Minneapolis
Pritchard, D. B.....Winona
Proshek, Charles E.....Minneapolis
Puffer, F. L.....Bird Island
Pugliese, Frank M.....Rochester

Quale, Victor S.....Rochester
Quigley, T. C.....Owatonna
Quinby, Thomas F.....Minneapolis
Quist, H. W.....Minneapolis

Raadquist, C. S.....Hibbing
Radabaugh, R. C.....Hastings
Radtke, H. P.....Rochester
Raihala, John.....Virginia
Rains, J. M.....Wilmar
Raiter, Franklin W. S.....Cloquet
Raiter, Roy F.....Cloquet
Ramsey, W. R.....St. Paul
Randall, Lawrence M.....Rochester
Rankin, F. W.....Rochester
Ransom, M. L.....Hancock
Ratcliffe, J. J.....Aitkin
Rathbun, C. A.....St. Cloud
Rebman, E. C.....Austin
Reddick, Charles E.....Rochester
Reed, Chas. A.....Minneapolis
Rees, S. P.....Minneapolis
Reeves, C. E.....Eagle Bend
Regnier, E. A.....Minneapolis
Reid, J. Spence.....Rochester
Reineke, George F.....New Ulm
Reiter, H. W.....Shakopee
Rentschler, Calvin B.....Rochester
Rentschler, Edwin B.....Rochester

Replogle, W. H. ..... Wabasha
Reynolds, Hugh ..... Hibbing
Reynolds, J. S. ..... Minneapolis
Rhines, D. C. ..... Caledonia
Richards, E. T. F. ..... St. Paul
Richards, W. B. ..... St. Cloud
Richardson, Fred S. ..... Belgrade
Richardson, Harold E. ..... St. Paul
Richdorf, L. F. ..... Minneapolis
Ridgeway, Alexander ..... Elrosa
Ridgway, A. M. ..... Annandale
Riggs, C. E. ..... St. Paul
Rimer, E. W. ..... Breckenridge
Rishmiller, J. H. ..... Minneapolis
Risser, E. D. ..... Winona
Ritchie, H. P. ..... St. Paul
Rivers, A. B. ..... Rochester
Rizer, R. I. ..... Minneapolis
Roadman, I. M. ..... Ponsford
Roan, Carl M. ..... Minneapolis
Robb, Edwin F. ..... Minneapolis
Robbins, C. P. ..... Winona
Roberts, L. M. ..... Little Falls
Roberts, Thos. S. ..... Minneapolis
Roberts, W. B. ..... Minneapolis
Robertson, A. W. ..... Litchfield
Robertson, H. E. ..... Rochester
Robertson, J. B. ..... Cottonwood
Robertson, P. A. ..... Austin
Robertson, W. P. ..... Litchfield
Robilliard, C. M. ..... Faribault
Robilliard, W. H. ..... Faribault
Robinson, J. M. ..... Duluth
Robitshek, E. C. ..... Minneapolis
Rochford, W. E. ..... Minneapolis
Rodda, F. C. ..... Minneapolis
Rodgers, C. L. ..... Minneapolis
Roehlke, A. B. ..... Elk River
Rogers, John T. ..... St. Paul
Roholt, C. L. ..... Waverly
Rood, D. C. ..... Duluth
Rose, J. T. ..... Lakefield
Rosen, S. ..... Minneapolis
Rosenberg, Maurice N. ..... Minneapolis
Rosenfield, A. B. ..... Pequot
Rosenow, E. C. ..... Rochester
Rosenthal, Robert ..... St. Paul
Rosenwald, R. M. ..... Minneapolis
Rothenburg, J. C. ..... Springfield
Rothrock, J. L. ..... St. Paul
Rothschild, H. J. ..... St. Paul
Rousseau, Victor ..... Maple Lake
Rowe, O. W. ..... Duluth
Rowe, Paul H. ..... Minneapolis
Rowe, W. H. ..... Minneapolis
Rowntree, L. G. ..... Rochester
Roy, J. A. ..... Red Lake Falls
Roy, Philemon ..... St. Paul
Rucker, Charles W. ..... Rochester
Rudell, Gustave ..... Minneapolis
Rudie, P. S. ..... Duluth
Ruhberg, George N. ..... St. Paul
Rumpf, C. W. ..... Faribault
Rumpf, W. H. ..... Faribault
Rutherford, W. C. ..... St. Paul
Rutledge, L. H. ..... Detroit Lakes
Ryan, John J. ..... St. Paul
Ryan, Mark E. ..... St. Paul
Ryan, W. J. ..... Duluth
Rygh, E. A. ..... Stillwater

St. Clair, G. G. ..... Duluth
Saffert, Cornelius A. ..... New Ulm
Sager, William W. ..... Rochester
Sahr, W. G. ..... Hutchinson
Salt, C. G. ..... Minneapolis
Sanderson, A. G. ..... Grante Falls
Sanderson, E. T. ..... Minneota
Sanford, A. H. ..... Rochester
Sargeant, H. L. ..... Fergus Falls
Satersmoen, Theo. ..... Pelican Rapids
Sather, Allen ..... Fosston
Sather, E. R. ..... Alexandria
Satterlund, Victor ..... St. Paul
Savage, F. J. ..... St. Paul
Sawatzky, Wm. A. ..... Minneapolis
Sawyer, H. P. ..... Goodhue
Schaaf, F. H. K. ..... Minneapolis
Schaefer, S. ..... Winona
Schatz, F. J. ..... St. Cloud
Schefcik, J. F. ..... Minneapolis
Scheldrup, N. H. ..... Minneapolis
Scherer, C. A. ..... Duluth
Schield, E. L. ..... Mankato
Schlesselman, J. T. ..... Mankato
Schlutz, Frederic W. ..... Minneapolis
Schmidt, P. A. ..... Good Thunder
Schmidt, W. R. ..... Glencoe
Schmitt, A. F. ..... Minneapolis
Schmitt, Earl O. G. ..... Rochester
Schmitt, S. C. ..... Minneapolis
Schnarrenberger, G. ..... Rollingstone
Schneider, H. A. ..... Jordan
Schneider, J. P. ..... Minneapolis
Schoch, J. L. ..... New Ulm
Schoch, R. B. ..... St. Paul
Scholpp, O. W. ..... Hutchinson
Schons, E. ..... St. Paul
Schroder, C. H. ..... Duluth
Schuldt, F. C. ..... St. Paul
Schultz, J. A. ..... Albert Lea
Schulz, Irwin ..... Rochester
Schulze, Albert G. ..... St. Paul
Schussler, Otto F. ..... Minneapolis
Schutz, Elmer S. ..... Mountain Lake
Schwartz, Virgil J. ..... Minneapolis
Schwyzer, Arnold ..... St. Paul
Schwyzer, Gustav ..... Minneapolis
Schwyzer, R. ..... Blackduck
Scofield, C. L. ..... Benson
Scott, F. H. ..... Minneapolis
Scott, R. A. ..... Detroit Lakes
Seashore, D. E. ..... Duluth
Seashore, Gilbert ..... Minneapolis
Seham, Max ..... Minneapolis
Seifert, Otto J. ..... New Ulm
Selleseth, Iver ..... Minneapolis
Senkler, G. E. ..... St. Paul
Senn, E. W. ..... Owatonna
Setzer, H. J. ..... St. Paul
Shafter, Royce R. ..... Rochester
Shaleen, A. W. ..... Hallock
Shannon, S. S. ..... Crosby
Shannon, W. Roy. ..... St. Paul
Shapere, A. D. ..... St. Paul
Shapiro, E. Z. ..... Duluth
Shaw, A. W. ..... Buhl
Shedlov, A. ..... Fosston
Sheedy, Chester L. ..... Austin
Sheldon, W. D. ..... Rochester
Shelland, J. T. ..... Ada
Shellman, John L. ..... St. Paul
Shelver, H. J. ..... Ortonville
Sheppard, Fred ..... Hutchinson
Sheppard, P. E. ..... Hutchinson
Sherman, Carnot H. ..... Bayport
Sherman, C. L. ..... Luverne
Sherman, H. T. ..... Franklin
Sherping, O. Th. ..... Fergus Falls
Sherwood, G. E. ..... Kimball
Shillington, M. A. ..... St. Paul
Simonek, Anton ..... St. Paul
Shippey, Stuart H. ..... Rochester
Shrader, E. E. ..... Watertown
Shroder, J. S. ..... Springfield
Shugrue, John J. ..... Rochester
Shulean, Nellie S. ..... Cambridge
Silvernail, F. ..... Elmore
Simison, C. W. ..... Hawley
Simon, B. F. ..... St. Paul
Simon, Geo. H. ..... St. Paul
Simon, Harold E. ..... Rochester
Simons, Bern. H. ..... Chaska
Simons, Edwin J. ..... Swanville
Simons, Jalmar ..... Minneapolis
Simpson, E. D. ..... Minneapolis
Simpson, J. D. ..... Minneapolis
Siperstein, D. M. ..... Minneapolis
Sistrunk, W. E. ..... Rochester
Sivertsen, Ivar ..... Minneapolis
Skinner, H. O. ..... St. Paul
Slater, S. A. ..... Worthington
Slocumb, J. A. ..... Plainview
Slocumb, Maude S. ..... Minneapolis
Slyfield, F. F. ..... Duluth
Smallwood, J. T. ..... Worthington
Smersh, F. M. ..... Owatonna
Smersh, J. F. ..... Owatonna
Smith, A. M. ..... Minneapolis
Smith, Arthur E. ..... Minneapolis
Smith, B. A. ..... Crosby
Smith, B. F. ..... Willmar
Smith, C. M. ..... Duluth
Smith, E. K. ..... Duluth
Smith, F. D. ..... Kasson
Smith, F. L. ..... Rochester
Smith, Harry L. ..... Rochester
Smith, Homer R. ..... Minneapolis
Smith, L. G. ..... Montevideo
Smith, M. W. ..... Red Wing
Smith, Newton D. ..... Rochester
Smith, Norman M. ..... Minneapolis
Smith, P. A. ..... Faribault
Snell, Albert M. ..... Rochester
Snyder, G. W. ..... St. Paul
Soderlind, A. ..... Minneapolis
Sogge, L. ..... Windom
Sohlberg, Olof ..... St. Paul
Sohmer, A. E. ..... Mankato
Solhaug, S. B. ..... Minneapolis
Somerfield, H. A. ..... Minneapolis
Souster, B. B. ..... St. Paul
Spicer, F. W. ..... Duluth
Sprafka, J. M. ..... St. Paul
Spratt, C. N. ..... Minneapolis
Stacy, L. J. ..... Rochester
Stangl, Fred ..... St. Cloud
Stangl, P. E. ..... St. Cloud
Stark, W. B. ..... Rochester
Steffens, L. A. ..... Red Wing
Steiner, I. W. ..... Winona
Stemsrud, A. A. ..... Dawson
Stephan, E. L. ..... Hinckley
Stephens, Brooks P. ..... Rochester
Stephenson, Robert A. ..... Rochester
Sterner, E. G. ..... St. Paul
Sterner, O. W. ..... St. Paul
Steven, Geo. ..... Bryon
Stevens, F. A. ..... Lake Elmo
Stevenson, Frank W. ..... Minneapolis
Stewart, A. B. ..... Owatonna
Stewart, Alexander ..... St. Paul
Stewart, C. A. ..... Minneapolis
Stewart, R. I. ..... Lindstrom
Stierle, Adolph, Jr. ..... St. Paul
Stillwell, W. C. ..... Mankato
Stinnette, S. E. ..... St. Paul
Stinson, John W. ..... Rochester
Stocking, Fred F. ..... Milaca
Stolpestad, H. L. ..... St. Paul
Stomel, Joseph ..... Minneapolis
Strachauer, A. C. ..... Minneapolis
Strathern, F. P. ..... St. Peter
Stratte, A. K. ..... Pine City
Stratte, Harold C. ..... Lancaster
Stratte, J. J. ..... Hallock
Strickler, A. F. ..... Sleepy Eye
Strobel, W. G. ..... Duluth
Strout, E. S. ..... Minneapolis
Strout, G. Elmer ..... Minneapolis
Stuart, A. B. ..... Cloquet
Stuhler, Louis G. ..... Rochester
Stuhr, J. W. ..... Stillwater
Sturges, C. J. ..... Buffalo
Sturre, J. R. ..... Minneapolis
Stuurmans, S. H. ..... Erskine
Sukeforth, L. A. ..... Duluth
Sundberg, R. H. ..... Pokegama
Sundt, M. ..... Minneapolis
Sutherland, C. G. ..... Rochester
Sutherland, H. N. ..... Ely
Sutton, Chas. S. ..... St. Cloud
Sutton, L. F. ..... Mazeppa
Swan, Theo. S. ..... Rochester
Swanson, Edwin O. ..... St. Paul
Swanson, John A. ..... St. Paul
Swanson, Roy E. ..... Minneapolis
Swartwood, F. A. ..... Waseca
Swedenberg, A. W. ..... Thief River Falls
Sweeney, Arthur ..... St. Paul
Sweetman, R. H. ..... Sauk Center
Sweetser, H. B., Sr. ..... Minneapolis
Sweetser, H. B., Jr. ..... Minneapolis
Sweetser, Theodore ..... Minneapolis
Sweitzer, S. E. ..... Minneapolis
Swendson, J. J. ..... St. Paul
Swennes, O. S. ..... Wahkon
Swenson, Arnold O. ..... Duluth
Swenson, Charles ..... Braham
Swenson, O. J. ..... Waseca
Swenson, Paul C. ..... Duluth
Swezey, B. F. ..... Buffalo
Sybilrud, H. W. ..... Bricelyn
Synhorst, Alfred P. ..... Rochester

Taft, John O. ..... Minneapolis
Taft, Walter L. ..... Minneapolis
Tangen, Geo. M. ..... Canby
Tanner, A. C. ..... Minneapolis
Tanquist, E. J. ..... Alexandria
Taylor, C. W. ..... Duluth
Taylor, H. L. ..... St. Paul
Taylor, Rood ..... Minneapolis
Taylor, Wm. J. ..... Pipestone
Teisberg, C. B. ..... St. Paul
Tennyson, Theo. ..... Minneapolis
Ternstrom, O. H. ..... Minneapolis
Thabes, J. A. ..... Brainerd
Thane, Benjamin ..... Breckenridge
Thomas, Geo. E. ..... Minneapolis
Thomas, Geo. H. ..... Minneapolis
Thomas, Gilbert J. ..... Minneapolis
Thompson, Albert ..... St. James
Thompson, H. H. ..... Minneapolis
Thompson, H. L. ..... Rochester
Thompson, J. W., Jr. ..... Rochester
Thompson, V. C. ..... Marine
Thordarson, Theo. ..... Minneota
Thoresen, Thor. ..... Brooklyn, N. Y.
Thornby, H. J. ..... Moorhead
Thorson, E. O. ..... Luverne
Thysell, F. A. ..... Moorhead
Tibbetts, M. H. ..... Duluth
Tiber, L. J. ..... St. Paul
Tiedemann, Elmer J. ..... Adrian
Tierney, C. M. ..... Granger
Tilderquist, D. L. ..... Duluth
Tilton, Albert J. ..... Alden
Tingdale, A. C. ..... Minneapolis

Tofte, Josephne—Dawson
Torkelson, P. T.—Lyle
Traeger, C. A.—Faribault
Tregilgas, H. R.—South St. Paul
Trutna, Thos. J.—Silver Lake
Tunstead, Hugh J.—Minneapolis
Tuohy, E. L.—Duluth
Turnacliff, D. D.—Minneapolis
Turnbull, F. M.—Duluth
Turnbull, Robert—Fosston
Tuttle, Thos. D.—St. Paul
Tweedy, G. J.—Winona
Tyrrell, C. C.—Minneapolis

Ude, Walter H.—Minneapolis
Ulrich, Henry L.—Minneapolis
Undine, Clyde A.—Minneapolis
Urberg, S. E.—Duluth
Utley, J. D.—Montrose, Calif.

Vadheim, A. L.—Tyler
Vail, James B.—Henning
Valentine, W. H.—Tracy
Van de Steeg, Wm. G.—Biwabik
Van Slyke, Chas A.—St. Paul
Van Valkenburg, B. F.—Long Prairie
Van Valkenburg, F. W.—Long Prairie
Veirs, Dean—St. Paul
Veirs, Ruby S.—St. Paul
Vercellini, C. E.—Duluth
Viecelli, James D.—Rochester
Vigen, J. G.—Fergus Falls
Vik, Melvin—Onamia
Vinson, P. P.—Rochester
Vogel, Joseph—New Ulm
Vogtel, Melvin A.—Minneapolis
Vollum, E. O.—Albert Lea
Von Berg, J. P.—Albert Lea
Von der Weyer, Wm.—St. Paul
Von Lackum, W. H.—Rochester
Voyer, Emile O.—Minneapolis
Vrooman, F. E.—St. Francis

Waas, Charles W.—St. Paul
Wagener, H. P.—Rochester
Wald, R. H.—St. Paul
Waldron, Carl W.—Minneapolis
Walker, A. E.—Duluth
Walker, G. H.—Winona
Walker, R. E.—St. Paul
Waller, Joseph D.—Wilmont
Wallinga, John H.—St. Paul
Walters, H. W.—Rochester
Wanous, E. Z.—Minneapolis
Ward, A. W.—Minneapolis
Ward, Percy A.—Minneapolis
Warham, T. T.—Minneapolis
Warner, E. F.—St. Paul
Warnock, R. W.—St. Paul
Warren, C. L.—Brewster
Warren, E. L.—St. Paul
Warren, F. S.—Faribault
Warwick, Margaret—St. Paul
Watson, A. M.—Royalton
Watson, F. G.—Worthington
Watson, J. A.—Minneapolis
Watson, John D.—Holdngford
Watson, N. M.—Red Lake Falls
Wattam, G. S.—Warren
Webb, R. C.—Minneapolis
Webber, Edward E.—Proctor
Weber, M. L.—Duluth
Webster, H. E.—Duluth
Weir, J. D.—Beardsley
Weir, J. F.—Rochester
Weirick, Howard R.—Hibbing
Weiser, Geo. B.—New Ulm
Weisman, S. A.—Minneapolis
Weissgerber, L. A.—Brownton
Welch, M. C.—St. Paul
Wellbrock, William L.—Rochester
Wellcome, J. W. B.—Sleepy Eye
Welles, H. J.—Minneapolis
Wentworth, A. J.—Mankato
Werner, O. S.—St. Paul
Westby, Nels—Madison
Westerman, F. C.—Montgomery
Wethall, A. G.—Minneapolis
Wetherby, Macnider—Minneapolis
Weum, T. Wm.—Minneapolis
Wheeler, D. W.—Duluth
Wheeler, M. W.—St. Paul
Wheeler, Theodora—Rochester
Whetstone, Mary S.—Minneapolis
Whitacre, J. C.—St. Paul
Whitcomb, Ed. H.—St. Paul
White, J. S.—St. Paul
White, Robert B.—Rochester
White, S. Marx—Minneapolis
Whitmore, F. W.—St. Paul
Whitney, A. W.—St. Paul
Whitten, Merritt B.—Rochester
Wickham, Mont. C.—Rochester
Widen, W. F.—Minneapolis
Wiese, H. F. B.—Minneapolis
Wilcox, Archa E.—Minneapolis
Wilcox, F. L.—Walker
Wilcox, M. Russell—Minneapolis
Wilder, R. M.—Rochester
Wilhelmj, Charles M.—Rochester
Wilkinson, Henry F.—Rochester
Wilkinson, Stella—Duluth
Will, W. W.—Bertha
Willcutt, Clarence—Minneapolis
Williams, Clayton—St. Paul
Williams, Henry L., Jr.—Rochester
Williams, H. L.—Minneapolis
Williams, Leon A.—Slayton
Williams, Robert—Minneapolis
Williams, R. J.—Pine River
Williams, R. V.—Rushford
Williams, Thomas B.—Rochester
Willius, F. A.—Rochester
Wilmot, H. E.—Litchfield
Wilson, Arthur N.—Warroad
Wilson, L. B.—Rochester
Wilson, R. H.—Harmony
Wilson, Warren—Northfield
Wilson, W. E.—Northfield
Wilson, W. F.—Lake City
Wiltrout, I. Geo—Oslo
Winberg, O. K.—Lake Park
Winnick, J. B.—St. Paul
Winter, J. A.—Duluth
Witham, C. A.—Minneapolis
Wittich, F. W.—Minneapolis
Wohlrabe, A. A.—Minneapolis
Wohlrabe, Clarence—Springfield
Wohlrabe, E. J.—Springfield
Wold, K. C.—St. Paul
Wolfe, H. H.—St. Paul
Woltman, H. W.—Rochester
Wood, Douglas F.—Minneapolis
Wood, H. G.—Rochester
Woodworth, Elizabeth—Minneapolis
Workman, H. M.—Tracy
Workman, W. G.—Tracy
Wray, W. E.—Campbell
Wright, C. B.—Minneapolis
Wright, Charles D'a.—Minneapolis
Wright, C. O.—Luverne
Wright, Franklin R.—Minneapolis
Wynne, H. M. N.—Minneapolis

Yater, Wallace M.—Rochester
Ylvisaker, L. S.—St. Paul
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A CLINICAL REPORT OF NINETY-THREE CASES OF SCARLET FEVER

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While at no time, in my short experience, has here been a sweeping epidemic of scarlet fever n this part of Minnesota, the disease has cropped up from time to time, especially during he school year; and in the past three years I ave cared for the 93 cases which form the basis f this paper. These cases were all treated un- ler the rather adverse conditions which obtain n the private home.

PRE-EXISTING CONDITIONS

Most of the patients were examined at various imes previous to their contracting scarlet fever. This made it interesting to correlate pre-existing conditions with complications which originated luring the course of the scarlet fever. Thus of he eight cases of otitis media, six suffered from chronic tonsillitis, one had had his tonsils re- noved two years previously and the other was ot seen until after the onset of scarlet fever. Out of the entire ninety-three, only nine had had onsillectomies performed. Thirty-seven were nown to have hypertrophied or definitely dis- ased tonsils. A large percentage of these also ad chronic infections of the nose. In fact, in nany instances there was a strong suspicion that he infection of the tonsils was only secondary to hat of the nose.

Clinical evidence of a former rickets was ob- erved in thirty-one of the cases. Cervical ad- nopathy occurred in fourteen of these thirty-one ases. This may be attributable to the many at- acks of upper respiratory infection with which achitic children are so frequently afflicted. All f the seven cases that developed nephritis bore he earmarks of an old rickets.

Four of the patients had had a previous endo- arditis. In two of these the endocarditis was ighted up by the scarlet fever. The worst case vas in a thirteen year old boy who had previous- ly suffered from a prolonged attack of Syden- ham's chorea complicated with endocarditis and arthritis. His father had been an ardent wor- shipper at the shrine of Dionysus. This boy also developed a severe nephritis in the third week of the disease.

Pre-existing chronic parenchymatous nephri- tis was known to have been present in two chil- dren. In both of these the nephritic symptoms were greatly exacerbated by the scarlet fever.

Two cases of congenital syphilis developed no complications, even though signs of rickets, hy- pertrophied tonsils and cervical glands were manifest in both.

One patient had a tuberculous rib. After his scarlet fever pulmonary symptoms appeared and he was sent to a sanatorium.

COMPLICATIONS

Adenitis was the most frequent complication. Slightly enlarged cervical and sub-maxillary glands were palpable in the majority of the cases. In nine the enlargement was striking, and al- though there followed no suppuration or slough- ing of glands, the course of these cases was greatly drawn out by the annoying continuance of temperature and the marked anemia. In two cases the hemoglobin dropped as low as 60 per cent and the red cells to less than 3,500,000 per cu. mm. A slight anemia seems to follow even the mild cases regardless of adenitis.

A faint trace of albumin was found in twenty- two patients. Osler[1] says: "At the height of the fever there is often a slight trace of albumin in the urine." Morse[2] states that the urine al- most always contains albumin. Albumin and casts were found in the seven nephritis cases. Only one of these had an hematuria and she was the only one to whom hexamethylenamin was given. I am inclined to blame the medication for the hematuria in this instance.

The only case of mastoiditis was in a boy of seven months. He had pyrexia and angina, but no rash, which lasted for two brief days. A week later he developed bilateral suppurative

Total No. 93	Adenitis	Mastoiditis	Nephritis	Otitis Med. (suppurative)	Otitis Med. (non-supp.)	Tuberculosis	Urticaria	Albumin & casts	Albumin, trace	Deaths
Complications No.	9	1	7	6	2	1	1	7	22	0
Per Cent	9.7	1.07	7.5	6.4	2.15	1.07	1.07	7.5	23.8	0

otitis media and bilateral mastoiditis; and was referred to a surgeon for operation. A sister was a convalescent from a definite attack of scarlet fever at this time.

Five cases contracted nephritis during the second and third weeks of their scarlet fever. Two others had chronic parenchymatous nephritis before contracting scarlet fever and an acute "flare up" took place in each instance.

There were six cases of suppurative otitis media and two of non-suppurative. This rather surprised me because in my experience with epidemics of influenza and coryza and a few cases of measles in this section of the country where nose and throat infections are so unusually prevalent, the incidence of otitis media was exceedingly high.

SERUM—DICK TEST—TOXIN

Four patients only were treated with Dochez' serum. In all the cases there was a very marked drop in temperature and fading of the rash within twenty-four hours. On the seventh day after administration, however, two of the patients developed a serum sickness attended by a rise of fever to 103 degrees, urticaria, asthmatic symptoms, an edema of the glottis which was alarming and an adenitis which lasted for weeks. It was only by repeated administration of 0.5 c.c. doses of epinephrine hypodermically that asphyxiation was prevented. Serum has not been used since. I have been waiting for a more concentrated and refined serum to be produced.

In April, 1925, 100 Dick tests were done on selected cases. All the positive ones were treated with 850 skin test units of toxin. In November, 1926, fourteen of these cases returned for Dick tests. Of three who had been given the toxin one three year old boy had a positive Dick. Two girls of four and seven respectively had negative reactions. Within ten days both of these girls contracted clinical scarlet fever. Eleven cases who showed negative tests in 1925 were still negative. Six of these, however (M.aet.6; M.aet.7; F.aet.9; F.aet.37; F.aet.38; M.aet.40) developed scarlet fever while quarantined in houses with scarlet fever patients, in spite of the isolation that was carried out. Three of these had negative reactions even on the day that the disease broke out in the house.

SCARLET FEVER WITHOUT A RASH

Three times did a rash fail to appear. A girl seven years old developed a typical strawberry tongue while her sister, aged 5, had clinical scarlet fever. She complained of no symptoms, had a temperature of 99 degrees when examined and no physical signs. A boy of seven months showed no rash but developed bilateral mastoiditis. A woman, thirty-eight years old, was attacked with a pseudomembraneous angina, fever of 103F, while caring for her daughter with scarlet fever. She was sick only three days; no rash was evident, not even on the palate, there was no strawberry tongue, and she did not desquamate. In fact, the attack resembled follicular tonsillitis. A hemolitic streptococcus was isolated from her throat. Another woman of thirty-five, not reported in this series, was diagnosed as suppurative tonsillitis. The tonsils were lanced and she improved. Four days after the onset of her "tonsillitis" her six year old son and four and eight year old daughters all developed typical scarlet fever.

CONCLUSIONS

1. Complications may develop in any case, but the rachitic, undernourished children with a chronic disorder are more often affected.

2. Anemia should receive special treatment in every convalescent case.

3. Children who remain sallow and listless and do not regain weight improve rapidly if the tonsils and adenoids are removed some weeks after the attack.

4. I believe that Gordon[3] strikes a keynote when he hints that negative nose and throat cul-

GROUP I

No.	Sex	Age	Highest Temp.	Rash	Throat	W.B.C.	Urine	Course	Complications
1	F	9	102	Mod.	Diff. red	37,000	Neg.	Mod.	None
2	M	19	101.5	"	" "	21,000	"	"	Tbc., pulmonary
3	F	11	101	Mild	" "		"	Mild	None
4	M	13	102	"	" "	32,000	Alb. & C.	"	Late nephr. severe endocarditis
5	F	9	105	Severe	" "	78,000	Alb. Tr.	Mod.	None
6	F	6	103	Mod.	" "		Neg.	"	"
7	F	9	102.5	"	" "	61,000	Alb. Tr.	"	Adenitis
8	F	10	103.2	"	" "	25,000	Alb. & C.	"	Nephritis
9	M	15	102.6	"	" "	32,000	Alb. Tr.	"	Otitis Media
10	F	2	104.1	"	" "	42,200	" "	"	None
11	M	6	101.8	"	" "		Neg.	Mild	"
12	M	9	103.2	"	Ps. Membr.	40,000	Alb. Tr.	Mod.	Ot. Med. Non-supp.
13	F	6	103.4	Severe	Diff. red	25,600	" "	"	None
14	M	6	104.8	"	Ps. Membr.	53,100	" "	"	"
15	M	8	100.8	Mild	Diff. red		Neg.	Mild	"
16	M	3	102	Mod.	" "	22,000	"	"	"
17	F	6	100.6	Mild	" "		"	"	"
18	M	3	103.3	Mod.	" "		Alb. Tr.	"	"
19	F	5	102.6	"	Ps. Membr.	30,000	" "	Mod.	Otitis Media
20	*F	7	99	None	No Sympt.		Neg.		None
21	F	8	101	Mild	Diff. red		"	Mild	"
22	F	4½	101.3	"	" "	17,000	"	"	"
23	F	14	103.6	Mod.	" "	16,200	Alb. Tr.	Mod.	"
24	F	9	103	"	" "	29,000	Neg.	"	"
25	M	4	102	"	" "	31,000	"	"	Ot. Med. Non-supp.
26	M	6	102	Mild	" "		"	Mild	None
27	F	6	104.2	Mod.	" "	27,400	Alb. Tr.	Mod.	"
28	F	15	102.3	Mild	" "	14,600	Neg.	Mild	"
29	F	11	105.3	Severe	Ps. Membr.	54,100	Alb. Tr.	Stormy	Adenitis
30	F	9	104.1	"	" "	34,000	" "	Mod.	"
31	F	6	102.8	Mod.	Diff. red	19,200	Neg.	"	None
32	F	4	102.6	"	" "	21,000	Alb. blood & casts	"	Nephritis, acute
33	M	9	100	Mild	" "	15,800	Neg.	Mild	None
34	F	8	103	Mod.	" "	28,400	"	Mod.	Adenitis
35	F	10	102	"	" "	24,000	"	"	None
36	F	24	102.4	"	" "	23,000	"	"	Adenitis
37	M	2½	103	"	" "	30,500	Alb. Tr.	"	Otitis Media
38	F	26	101	"	Ps. Membr.	20,600	Neg.	"	None
39	F	10	101.8	"	Diff. red		"	Mild	"
40	F	8	100.2	Mild	" "		"	"	"
41	M	12	103.1	Mod.	" "	21,000	"	"	"
42	F	7	102	"	" "		"	Mod.	"
43	M	12	101	"	" "	16,900	"	Mild	"
44	F	4	101.1	"	" "	31,000	"	Mod.	Adenitis
45	F	16	102	Severe	Ps. Membr.	14,800	Alb. Tr.	"	None
46	F	6	101.3	Mild	Diff. red		Neg.	Mild	"
47	M	7 Mo.	104	None	Ps. Membr.			Severe	Ot. Med. Mastoid
48	F	13	101.8	Mild	Diff. red		Neg.	Mild	None
49	F	3	103	Mod.	" "	18,100	Alb. Tr.	Mod.	Otitis Media
50	M	5	102	"	" "	18,200	Neg.	"	Adenitis
51	M	11	101.5	Mild	" "		"	Mild	None
52	F	23	103.7	Severe	Ps. Membr.	15,000	Alb. Tr.	Mod.	"
53	M	6	103.4	Mod.	" "	23,900	Neg.	"	2nd attack
54	F	5	100.8	Mild	Diff. red	16,400	"	Mild	None
55	F	4	102	"	" "		"	"	"
56	M	6	104	Mod.	" "		Alb. Tr.	Mod.	"
57	F	8	100.2	Mild	" "		Neg.	Mild	"
58	F	4	103	Mod.	" "		"	"	"
59	F	5	102.4	"	" "	15,400	"	"	"
60	M	10	103.6	"	Ps. Membr.	25,300	Alb. Tr.	Mod.	"
61	M	8	103.1	"	" "	21,100	" "	"	"
62	M	7	103.8	"	" "	28,000	Alb. & C.	"	Nephritis, adenitis
63	F	7	102.5	"	Diff. red		Neg.	Mild	None
64	F	18	104.1	Severe	Ps. Membr.	36,200	Alb. Tr.	Mod.	"
65	F	10	102	Mild	Diff. red		Neg.	Mild	"
66	F	8	102.8	"	" "	16,000	"	"	"
67	M	11	103.2	Mod.	Ps. Membr.	24,500	Alb. Tr.	Mod.	"
68	F	3	105	Severe	" "	98,000	" "	Severe	Otitis Med. Bilat.
69	M	19	102.2	Mod.	Diff. red	15,800	Neg.	Mod.	None
70	F	15	101.8	Mild	" "		"	Mild	"
71	F	11	102.6	Mod.	Ps. Membr.		Alb. Tr.	Mod.	"
72	M	12	101.6	Mild	Diff. red	14,600	Neg.	Mild	"

GROUP I---continued.

No.	Sex	Age	Highest Temp.	Rash	Throat	W.B.C.	Urine	Course	Complications
73	F	9	102.2	Mild	Diff. red		Neg.	Mild	None
74	F	10	100.8	"	" "		"	"	"
75	F	4	101.4	Mod.	" "		"	"	"
76	F	1½	102.4	"	" "		"	"	"
77	F	5	101	Mild	" "		"	"	"
78	F	21	101.2	"	" "		"	"	Urticaria, late

GROUP II

No.	Sex	Age	Temp.	Rash	W.B.C.	Urine	Dick	Toxin	Dochez Serum	Course	Complications
1	F	6	102.6	Mod.	16,300	Neg.	Pos.	None	None	Mod.	None
2	M	3	103	"	22,000	"		"	Yes	Mild	"
3	F	3	103.4	"	26,400	"		"	"	Mod.	Serum sickness Adenitis
4	M	5	102.8	"	24,200	"		"	"	"	Serum sickness Adenitis
5	F	13	103.6	"	18,900	"		"	"	"	None
6	F	8	102.4	Mild	22,600	Alb.	Neg.	850U	None	"	Nephritis, late
7	F	4	103	"		Neg.	"	"	"	"	None
8	M	7	101	Mod.		"	"	None	"	"	"
9	F	38	103	None	18,000	"	"	"	"	Mild	"
10	M	9	101.4	Mod.	15,200	Alb.	"	"	"	"	Endocarditis Nephritis
11	F	37	100.8	Mild			"	"	"	Mod.	None
12	F	8	101.4	"	20,800	Alb.	"	"	"	Mild	Nephritis
13	M	40	100.4	"			"	"	"	"	None

tures might give better grounds on which to release quarantine than complete desquamation. I am inclined to think that all "return" cases become infected through convalescent carriers.

5. Many cases of scarlet fever without a rash are diagnosed as tonsillitis, and herein lies almost as great a source of dissemination as in the very mild cases where no physician is called.

6. There is no biochemical foundation for the use of hexamethylenamin. Citrate or acetate of sodium or potassium is much better tolerated by children.

7. It appears that with the present standard of one skin test unit of toxin, a positive Dick test is obtained up to a certain concentration of antibodies in the blood and tissues. When the concentration of antibodies increases beyond that point the test becomes negative. However, some individuals with very faintly positive or entirely negative Dick reactions may contract scarlet fever after the intimate or repeated contact which results from quarantine of well persons in the same house with the sick. The place for a scarlet fever patient is in an isolation hospital.

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THE SCARLET FEVER PATENTS

The Scarlet Fever Committee, established to control the use of the methods resulting from the discoveries of the Drs. Dick relating to scarlet fever, has thought it advisable to secure in Great Britain patents similar to those sought in this country for the protection of the manufacture and use of the methods and products. In view of alarm expressed in British medical publications, the Drs. Dick explain that they sought the most competent advice before embarking on the procedure. They reveal that they have not had and will not receive compensation personally from the patents; they have sought only to prevent the manufacture and sale of unworthy or inefficacious products in order that the public might be protected against commercial exploitation. (Jour. A. M. A. April 23, 1927, p. 1324.)

TUMORS OF BONES*

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The object of this paper is to review and summarize the literature on bone tumors and to correlate it with the new classification of this type of pathological lesion; also to add some additional data obtained from the study of ninety-two gross specimens of bone tumors. The opinions of competent and experienced observers will be quoted as regards diagnosis, prognosis and treatment of these conditions.

The outstanding contributors on the subject of bone tumors are Nealton, Gross, Bloodgood and Ewing.

A review of the work of these men impresses one with the confusion that has arisen from the lack of uniformity in nomenclature and the need of a new classification. The classifications used by Bloodgood and Gross correspond closely—both authors depending primarily on various cell types or tissue types as the basis for their divisions and to some extent on the anatomical point of origin of the neoplasm. Nealton's classification is more definitely on a cellular or tissue basis. Ewing's classification depends upon the cellular structure from which the tumor cells apparently originate, such as osseous, myeloid and endothelial tissue.

In the less extensive contributions on this subject the writers have generally attempted to follow the original classifications of Gross and Bloodgood. However, we do find one excellent report by Greenough, Simmons and Harmer in which Ewing's classification has been followed.

On the basis of the earlier classifications, it is very difficult to correlate the pathological diagnosis with the clinical course and outcome.

Codman writes as follows: "The time when small and large, round and spindle, polyhedral or mixed cell sarcomata mean anything has gone by. We can continue to use these terms if we do not speak of them as clinical entities." This fact applies to tissue terms as well as cell terms.

With the increasing knowledge due to the accumulation of data on bone tumors, the truth of Codman's statement is proven. Bloodgood in his study of 370 cases of benign and malignant bone tumors used the cellular and tissue classification, viz., osteo-, myxo-, chondro-, spindle-, mixed and round cell sarcoma. His clinical observations show the correctness of Codman's statement, that the histological structure of a bone sarcoma has very little significance in prognosis.

A committee of surgeons and pathologists, appointed by the American College of Surgeons, met in New York City in 1923 and tentatively adopted the following classification of bone tumors.

I. Osteogenic Tumors
  A. Benign
    a Chondroma
    b Osteoma
    c Exostoses
    d Fibroma
  B. Malignant
    a Anatomical Types
      1 Periosteal
      2 Medullary and Subperiosteal
      3 Sclerosing
      4 Telangiectatic
    b Undifferentiated Sarcoma
II. Periosteal Fibro-Sarcoma
III. Giant Cell Tumor
IV. Myeloma
V. Endothelioma (Ewing's Tumor)
VI. Angioma
VII. Metastatic Tumors
VIII. Inflammatory Conditions Simulating Bone Tumors
  A. Osteoperiostitis
    a Luetic
    b Tuberculous
    c Traumatic
  B. Osteitis Fibrosa Cystica
  C. Myositis Ossificans.

The above classification has just been published by Codman so that there are few publications in which it has been followed.

This paper is based upon a study of the bone tumors from the museum of the Department of Pathology of the University of Minnesota. The tumors were grouped according to the new classification as given above with some minor variations. A brief discussion will be given of the different tumor groups with an illustrative case when possible. All illustrations are from the University of Minnesota collection.

*From the Department of Pathology, University of Minnesota.

I. OSTEOGENIC TUMORS

A. Benign—This group includes the chondromas, osteomas, exostoses and fibromas. Christensen found 35 cases distributed according to age about equally, through the second, third, fourth, fifth and sixth decades. Twenty-two of the cases involved the long bones, three the phalanges of the hand, the rest being distributed over the skeleton. The reason for lack of publications dealing with this group is probably attributed to the ease of diagnosis and the favorable outcome following simple removal of these tumors. They may attract the patient's attention by their size or because of pressure on adjacent structures.

a. Chondromas—This group is the most interesting of the benign tumors. The ecchondroses are localized overgrowths of cartilage occurring as limited outgrowths of pre-existing cartilage, as in the ribs, larynx and about the joints. The enchondromas are true progressive neoplasms which may appear at the same locations as the ecchondroma as well as in tissue not normally containing cartilage. These tumors are usually single but the multiple character of certain chondromas is very striking. In some cases nearly every bone in the body is involved.

Meyerding reports eighteen cases of true chondroma. He summarizes the conditions as follows: "Chondromas develop at the site of pre-existing cartilage and tend to invade the epiphysis. The periosteum is not involved as determined by *x*-ray and at operation. They do not invade the soft periosseous tissues. Trauma appears to be an etiologic factor especially in growths about the hands. They occur most frequently in the young but may occur at any period in life. These tumors may recur following incomplete removal." Of the eighteen cases reported by Meyerding, none showed subsequent malignant changes.

The presence of small or large amounts of myxomatous tissue associated with cartilaginous overgrowths is a very frequent occurrence. Keiller states that this is by no means a sign of malignancy. Bloodgood, however, would consider all tumors containing myxomatous tissue as very suspicious and would treat all of them as borderline conditions.

In our collection there are three chondromas: one, of the second phalanx of the finger; one, with origin in the ilium; and one, from the first sacral vertebra. In only one case, the first mentioned, was there a history of trauma. This had occurred thirty-nine years previous. A palpable growth was first noticed thirty years before. The slow growth of this tumor would indicate its benign nature as was proven by microscopic section. Of the other two, only the chondroma of the sacrum had caused any clinical symptoms. These consisted of a long and stubborn constipation which could be explained when at operation it was found that the tumor projected anteriorly into the pelvis, thus causing direct pressure on the large bowel.

b. Osteoma—Osteoma is the term applied to tumors composed of bone, and, strictly speaking, should be limited to true neoplasms. It is difficult to distinguish bone hyperplasia from true osteoma. In view of this fact it is customary to include all forms of benign overgrowths of bone as osteoma. These tumors are of special interest clinically when they appear about the facial bones and antra, especially when they appear in the orbit. Ewing states that this type of orbital tumor not infrequently occurs as a congenital growth in young girls. The osteoma produces symptoms only by pressure on adjacent organs or tissues. In the orbit, unilateral exophthalmos may be the first indication of the presence of the tumor. It responds readily to sur-

Fig. 1. Enchondroma of the middle phalanx of index finger. History of injury thirty-nine years previous. No evidence of malignant growth microscopically.

gery, simple removal being sufficient to effect a cure.

c. Exostoses—They are circumscribed tumor-like masses, projecting from the surface of bones and intimately connected with the body or shaft of the bones. They may be flat, tuberous, nodular, globular, pointed or ragged growths which appear at epiphyseal junctions or on the shafts of long bones and at the insertions of tendons and fascia. Multiple exostoses occur on the borders of the vertebræ and involve the intervertebral discs. In the cervical region they may produce palpable tumors.

Ewing considers the osteoma and the exostosis to be closely related.

Clinically they offer the same problem as the osteoma. If these tumors produce deformity or subjective symptoms by pressure, surgery is indicated, simple removal being sufficient to effect a cure. They never recur. Malignant changes in these tumors are unknown.

Four specimens of exostoses were studied: two from the distal ends of the femur, one from the scapula and one (multiple) on the bodies of the vertebræ. Only the tumor on the scapula reached any considerable size. This was a mushroom-like growth 3x7 cm. which was connected to the body of the scapula by a narrow base. It produced no symptoms, but because of its size and resulting deformity it was removed.

d. Fibromas—These are comparatively rare tumors in bones. The long bones are occasionally the seat of hard fibromas where the history of trauma is common. These tumors may be either osteal or periosteal in origin, occurring in the flat as well as the long bones (Ewing).

Interest in this group is in differentiating them from the malignant forms of bone tumors. This may be done by obtaining a history of long duration, aided by microscopical study of tissue obtained at biopsy.

No mention of this group was found in the recent literature. This can be explained because more recent writers apparently consider this identical with the solid forms of osteitis fibrosa cystica. This would not be true of the periosteal fibromas.

Excision of the tumor is sufficient to effect a cure. This as a rule is not difficult, due to the fact that the tumors are definitely encapsulated. Any tumor that does not have a true capsule is likely not to be a fibroma. The final diagnosis depends upon the histological feature of the growth.

e. Mixed tissue tumors—Fibrous tissue, myxomatous tissue, cartilage and bone may occur in any combination in benign osteogenic tumors. Some observers look upon such tumors as more likely to be malignant than benign. Especially is this true if myxomatous tissue is present in the tumor. Keiller does not entertain the same viewpoint. Certain tumors may change from one tissue type to the other, as exemplified by the complete ossification of an original true chondroma. Keiller, Ewing and others believe that myxomatous tissue may be transformed into cartilage and vice versa. This belief is supported by the similarity of these two tissues in the early embryo.

There were five benign, mixed tissue tumors in this collection. Four were osteochondromas, involving the femur, tibia, fibula and ilium, the fifth, an osteo-myxochondroma with origin in the chest wall. All of these tumors were of long duration and slow growth. In no case was pain a factor. In each case the size of the tumor and the resulting deformity were the factors that caused the patient to seek surgical relief.

B. Malignant Osteogenic Tumors (Osteogenic Sarcoma)—This group includes the true bone sarcomata. Histologically these tumors may show areas of fibro, spindle, mixed or round cell sarcoma; myxomatous tissue, cartilage, bone or osteoid tissue. Usually several of these tissue types are present in the same tumor.

The anatomical types listed above rarely appear to be clinical entities. No one has yet studied a series of bone sarcoma with this point in view. However, a few observations have been made which indicate that the sclerosing type has a more protracted clinical course.

Christensen collected 441 cases of osteogenic sarcoma. Fifty-nine per cent occurred in males and forty-one per cent in females. The greatest incidence was in the second decade (33 per cent). In the third decade there occurred 18 per cent. Greenough, Simmons and Harmer record 63 per cent occurring before the thirtieth year. As to location, Christensen found 79 per cent of all malignant tumors occurring in the long bones of the body.

Certain objective and subjective factors are of

such clinical importance as to merit a brief discussion.

Nestos quotes Reinhardt as having found a definite history of trauma in 16.6 per cent of his cases. Greenough, Simmons and Harmer are quoted having reported 40 per cent of their cases following definite and antecedent trauma. Nestos reports two of his own cases; one a benign, the other a malignant osteogenic tumor as having followed definite trauma. Gross, quoted by Coley, found 40 per cent of his own cases gave a definite history of trauma. No author claims trauma to be a necessary etiologic factor, yet none denies this possibility. Christensen calls attention to the fact that those bones of the body most likely to sustain trauma are also the ones containing the highest incidence of malignant sarcoma.

Pain is the most important subjective symptom. Coley states that pain may exist for several weeks before physical examination shows any evidence of a bone lesion. This is especially true of pain occurring in a young, healthy adult.

Tenderness and swelling usually occur together. They may be the first evidence of a pathological condition in the underlying bone.

Redness and local heat may occur; but as a rule these symptoms are transitory and do not exist throughout the course of the disease.

Disability seldom occurs as an early symptom. This is a striking factor in view of the severity of the lesion.

Spontaneous fracture may occur, but as a rule not until the disease has progressed for a considerable period of time. If it does occur as the initial symptom it is more likely to be due to giant cell tumor or to a metastatic lesion, than to a primary bone sarcoma.

a. Anatomical types:

1. *Periosteal Sarcoma.*—In this group are included all osteogenic sarcomata that develop at the surface of the bone. They commonly encircle the bone completely with little or no penetration into the cortex. Bloodgood reports fifty-two cases of this type with special emphasis on the outcome. Following operation there were only two five year cures or less than 4 per cent, one three year cure, three two year cures. Two cases lived over one year and thirty-six of the cases survived one year or less from the onset of the symptoms. The average duration of life after onset of symptoms was one and one-half years.

This group of tumors, when typical, presents a characteristic *x*-ray appearance. Usually there is a local fusiform expansion of the periosteum with or without thinning of the bone beneath the tumor mass. Bone proliferation may be manifested by radiating spicules of bone throughout the tumor substance which are deposited at right angles to the shaft of the bone.

There were twenty specimens of periosteal sarcoma to be examined. The situations were as follows: femur 7, tibia 6, humerus 3, fibula 2, mandible 1 and pelvis 1. Age was given in fifteen cases. It varied between nine and seventy years, both extremes being in males. Nine cases appeared before the twentieth year, eleven before the thirtieth year. The second decade contained eight cases. The average age was twenty-seven years. Pain was an early symptom in eleven cases. Four cases gave a history of antecedent trauma. The duration of symptoms before operation averaged seven months. Fifteen cases were treated by operation, two by resection, three cases were autopsy specimens. Follow up was obtained on four cases. The longest survival of any case after operation was one year. The total duration from beginning of symptoms to death in no case exceeded one and one-half years.

2. *Subperiosteal and Medullary Sarcoma.*—This group may be defined as showing central bone destruction and subperiosteal bone proliferation. Histologically, definite osteogenic origin of the tumor must be proven. The characteristic *x*-ray picture shows central thinning of the bone without expansion of the cortex. The cortex is broken in one or more places showing subperiosteal invasion of the tumor. If new bone formation is manifested it is laid down as radiating spicules of bone beneath the periosteum and at right angles to the shaft of the bone.

In this report all tumors are put into this group that showed grossly central or central and subperiosteal involvement, with a histologic structure of osteogenic sarcoma.

There were twenty-two tumors of this type studied. Sex was given in nine cases; five in males and four in females. Age was stated in fourteen cases, the average age being twenty-four years. The average duration of symptoms before operation was thirteen months. The tumors were located as follows: femur 14, humerus 3, fibula 3, tibia 2. Amputation was performed in eighteen cases and follow up was obtained on

seven cases. One case had four operations for recurrences 24, 42, 56 and 58 months respectively after the first operation. Of the seven cases upon which follow up was obtained, only three cases survived amputation for one year. No case exceeded that length of time. In this group there is one case with a total duration of six years, one of four years, one of three and a half

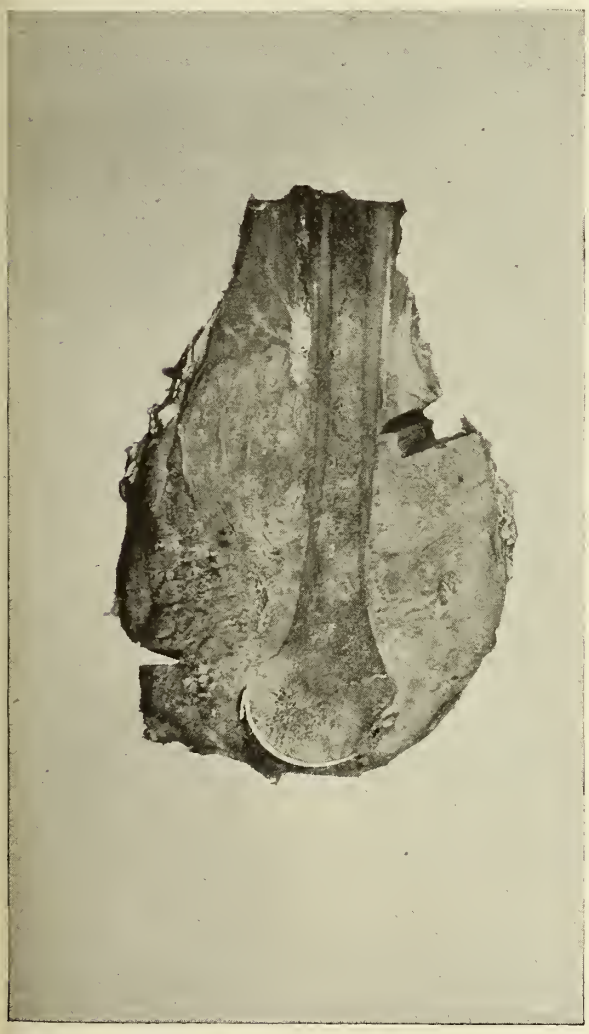

Fig. 2. Periosteal sarcoma of the humerus. Microscopically this is a spindle cell sarcoma of very malignant degree.

years and one of two years. One case is still living, operation having been performed three months ago.

It is of considerable interest to note that the two cases of longest duration, namely six and four years, both occurred in patients over fifty years of age; and that the histological structure of these tumors was that of a fibro-sarcoma. Careful gross examination convinces one that these tumors have invaded the bone from the outside, undoubtedly having their origin in the periosteum or fascia lying adjacent to the bone. This factor will be spoken of again under the group of paraosteal sarcoma.

3. *Sclerosing Sarcoma.*—This group of tumors is a variety of the subperiosteal and medullary group. We know that the amount of bone

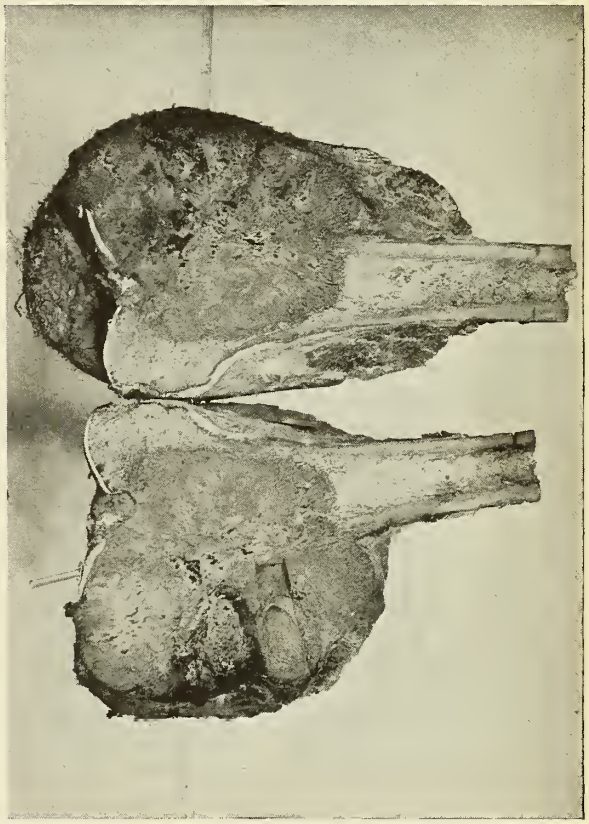

Fig. 3. Subperiosteal and medullary sarcoma. Mixed cell type. Total duration of symptoms in this case was eighteen months.

production in osteogenic sarcoma varies considerably. When it takes place through the greater part of the tumor it is called sclerosing. This group, amounting to a small percentage of all bone sarcomata, offers the best prognosis with the exception perhaps of the periosteal fibro-sarcoma. MacGuire and McWhorter report four cases well two, four, six and seven years after amputation. Greenough, Simmons and Harmer report one case well after the three year period.

Codman states that the actual cellular constituents in this type of tumor are no less malignant than in the other types. Rather the better prognosis is due to lack of communication between

arterial and venous spaces, thus decreasing the possibility of metastasis.

The university collection yielded only one such specimen. It occurred in a male aged 15, who gave a history of trauma five years before. Pain was a prominent symptom throughout the course of the disease. Operation was performed after

Fig. 4. Example of giant cell tumor that has broken through the cortex of the bone and invaded the surrounding soft tissues.

Fig. 5. Sclerosing sarcoma. Tumor made up of compact bone with areas of soft tissue intervening. This type of bone sarcoma offers the best prognosis.

a diagnosis of osteomyelitis was made. No follow up could be obtained on this case.

4. *Telangiectatic Sarcoma.*—This group, like the sclerosing sarcoma, is another variety of subperiosteal and medullary sarcoma. It forms a very small percentage of bone sarcoma; but, unlike the sclerosing sarcoma, it is claimed to be the most rapidly fatal of all types.

Codman thinks that this factor of early metastasis is due to increased vascularity as compared with other groups.

The outstanding feature of this type of tumor is the rapid amount of bone destruction, without bone formation, that occurs. This lack of bone formation is the factor that separates this type from the subperiosteal and medullary sarcoma. These tumors are often called bone aneurysm or bone cysts.

No discussion of this type of tumor was found in the literature. Our collection yielded none of the telangiectatic bone sarcoma for study.

b. Undifferentiated Sarcoma—In this group are included tumors that are primarily in bone and resemble known osteogenic sarcoma in their gross appearance, but on microscopic examination no differentiated material of any kind is found. They are presumably osteogenic sarcomas but definite proof is not obtained. It seems better therefore to retain these in a separate group for the present.

Christensen in his collection of 1,000 cases of bone tumors does not report any belonging to this group. We have no examples of this group in our collection. When this type of tumor does

occur it offers the same clinical problem as any of the other malignant osteogenic sarcomas.

II. PERIOSTEAL FIBRO-SARCOMA

This group is carried as a separate class because of the fact that certain tumors whose apparent origin is in the periosteum seem to offer a better prognosis than certain other tumors of periosteal origin. Histologically these tumors have the structure of a fibro-sarcoma; clinically, they lie next to the bone but do not invade it although they may cause absorption by pressure on the adjacent surface of the bone. Metastases are less likely to appear due to the infrequent occurrence of cell-lined blood channels.

Christensen encountered six cases of fibro-sarcoma, four occurring in females and two in males. The average age of the patients was twenty-six years. Five of these tumors had their origin in long bones and one in the scapula. Five cases were well two years or more and the sixth case one year after treatment was instituted.

Careful histological study of our group of specimens revealed only two cases that had the microscopic structure of a fibro-sarcoma. They did not, however, fit into our conception of this group of tumors because they showed definite central involvement of the bone shaft; and because of this fact they were placed in the group of subperiosteal and medullary sarcomas.

PARAOSTEAL SARCOMAS

It will be noted that this group is not included under the classification of bone tumors as published by Codman. But we feel that it should be inserted in a discussion of this type in order to obtain complete understanding of the problem of bone tumors.

These tumors have their origin in tissues adjacent to the bones. They should be considered in this discussion because it is clinically impossible to distinguish them from periosteal sarcoma. Often a careful gross examination of the amputated extremity is necessary before this distinction can be made. The *x*-ray is of value in diagnosis since it shows no new bone formation although there may be considerable bone absorption from pressure.

Histologically these tumors may be fibro-sarcoma, spindle, round or mixed cell in type. The malignancy varies with the histological structure, it being least in the fibro-sarcoma.

The eight tumors of this group, in our series, were situated as follows: scapula 1, chest wall 1, thigh 3, popliteal space 1 and leg 2. The average duration of symptoms before operation was 23 months. One case gave a history of pain for a period of six years. Age was stated in four cases with an average of fifty-two years.

In general the prognosis is said to be much better in paraosteal than in osteogenic sarcoma. McCosh has reported several long standing cures of tumors which evidently belonged in this group although he reported them as bone sarcoma.

III. GIANT CELL TUMOR

This group of tumors present a definite clinical entity. The condition was first described by Lebert in 1850. At that time the term myeloid tumor was used. Since, it has been described under various names such as myeloid sarcoma, giant cell sarcoma, giant cell sarcoma of epulis type and hemorrhagic osteomyelitis. At present the term "giant cell tumor" seems to be gaining wide acceptance.

Clinically this tumor is of long duration and slow growth. It occurs as a central expansive growth in the ends of long bones although it may occur in other bones. It is often associated with trauma. Coley reports fifty cases with 56 per cent preceded by definite trauma. Meyerding reports twenty-four cases with 54 per cent following a history of injury. The latter author suggests that trauma associated with a focus of infection some place in the body may be an important etiological factor. Trauma was present in only 12 per cent of the university series. However, a definite history of injury, rather in the nature of jarring or slight injury directly preceding the first subjective symptoms, was present in 50 per cent of our cases. This may be an important factor in differential diagnosis.

The tumor is usually confined within the periosteum, definitely circumscribed, not infiltrating and is easily removed from its bone shell. It is distinctly vascular and simulates young granulation tissue. It is friable and soft, oozes and resembles red currant jelly or freshly cut liver. The tumor gradually expands the bone, destroying it slowly by absorption. Rarely it breaks through the periosteum, and still more rarely it may invade the neighboring joint and soft tissue.

Not all giant cell tumors are red and hemorrhagic as proven by two of our cases. In these

tumors the tissue was firm and whitish and resembled a fibroma.

Microscopically the characteristic structure consists of giant cells, of varying number, in a tissue which is in some parts like an active fibroma, in other parts like a fibro-sarcoma. It is never as rapidly growing as the malignant forms of sarcoma. Giant cells are not found in every section. Islands of cartilage were found in one of our cases. Cartilage has also been found by Ewing and Greenough. The type cell is apparently a fibroblast.

Nealton stated that this tumor never metastasized. On this point Coley would disagree. Ewing described this lesion as being benign but as recently as 1922 he, along with Stone, reports a case of metastasis from a tumor previously diagnosed as giant cell tumor.

Christensen collected data on 362 cases of giant cell tumors and reported according to distribution as follows: 23.7 per cent in upper extremities, 25.7 per cent in head and trunk including scapula and clavicle and 50.6 per cent in the lower extremities.

In our series of eight cases, four were in the upper and four in the lower extremities.

The tumor is such a definite entity that opinions of experienced observers regarding prognosis and treatment are worthy of review.

Meyerding concludes that this group of tumors offers a good prognosis as regards life and functional results providing the bone has not undergone too extensive destruction before operation is performed. He bases his conclusions upon the results obtained from treatment of twenty-four cases, twenty-three of which were followed from two to fifteen years. None of these cases showed any evidence of metastasis.

Coley entertains a less optimistic viewpoint but after reviewing his work one is unable to quote his statistics as being of value due to the fact that he has based his results upon a group of tumors designated as giant cell sarcoma and from cases presented it is evident that he has included in his group certain central osteogenic sarcomata that contain giant cells. It is a known fact that many malignant sarcomata contain giant cells.

There is at present no uniform method of treatment of the giant cell tumor. Amputation, which was the favorite treatment a decade ago, is seldom done at present. Curettement with cauterization of the cavity as advised by Bloodgood in 1911 is perhaps now more universally used than any other method. Ewing criticises the above method of treatment on the grounds that infection frequently follows curettage and may lead to prolonged suppurative osteomyelitis and septicemia, or the tumor recurs and repeated curettage and trauma may transform an originally benign process into one clinically malignant. In view of this fact he recommends routine treatment with *x*-ray and radium by which these hazards may be avoided. Meyerding recommends conservative treatment: viz., curettage followed by phenol and zinc chloride or even the use of the actual cautery. MacGuire and McWhorter would treat the giant cell tumor with curettage and cauterization provided the lesion was a typical one. If microscopical diagnosis were doubtful resection should be done and if the soft parts were invaded they would recommend amputation.

IV. MYELOMA

This group of tumors have in the past been described under various names. In 1820, McIntyre described this type of lesions which he called Mollities Osseans. Since then various terms such as senile osteomalacia, myelogenous pseudoleukemia and primary multiple sarcoma of the bone have been used.

Ewing defines the condition as follows: "It is a specific malignant condition of bone marrow arising probably from a single cell type, and characterized chiefly by multiple foci of origin, a uniform and specific structure composed of plasma cells or their derivatives, rare metastasis, albumosuria and a fatal termination." He divides this condition histologically into four groups according to the type of cell present.

Whether they be of plasma-cytoma, erythrocytoma, myelo-cytoma or lympho-cytoma makes little difference in this discussion, for, as Codman stated, "the boundary lines are very difficult to draw and for practical purposes the histological varieties are the same clinical entities."

Our chief concern with this group deals with diagnosis. Ewing states that it is a disease chiefly of males occurring in the fourth or fifth decades. Christensen reports twenty-eight cases with 58 per cent occurring in males and 42 per cent in females. However, he calls attention to a reference made by Berkheiser, who collected 204 cases in which 76 per cent of the cases oc-

curred in the male sex. Christensen found 39 per cent of his cases occurring before the age of twenty-one years. This is quite a contrast to Ewing's statement that the disease is one of middle age. Greenough, Simmons and Harmer report one case occurring at the age of fifteen years and two in the fourth and fifth decades. Our collection contains four cases of multiple myeloma; one at age of sixteen years and the other three all occurring in or later than the fifth decade. Bloodgood reports thirteen cases, the youngest occurring at the age of forty-three, the oldest at sixty-nine.

Multiple lesions are the rule, but that this is not absolute is shown by Greenough, Simmons and Harmer when they report two cases as having single lesions.

The lesions usually appear first in the flat bones although this again is not a fast rule. Two of the cases in our collection showed the first symptoms in the long bones. Christensen places the femur and tibia in second and third places respectively as being the bones earliest affected.

As to differential diagnosis the conditions most likely confused are metastatic carcinoma and hypernephroma, generalized forms of cystic disease, multiple central chondromas and osteomalacia.

Ewing, Codman and Meyerding say that the prognosis with the multiple lesions is uniformly fatal. This fact is generally accepted as regards the multiple lesions. However, Bloodgood (Codman's Registry) reported a case of single myeloma in the distal end of the femur in which amputation was the only treatment and the patient was well eleven years later.

In Meyerding's series of thirteen cases the average duration of symptoms was twenty-two months. That the condition may be rapidly fatal is shown by one of his cases that survived only three months after the onset of symptoms.

Regarding treatment, Meyerding gives the following summary:

1. Recumbency or fixation in plaster cast to alleviate pains.

2. Radiotherapy should be given a trial. Regarding this point, Codman states that following this treatment local relief may occur and the case be definitely protracted.

3. Surgery should be done only for the purpose of diagnosis.

4. Transfusion is only of transient value.

Before leaving this group I wish to point out the features of one case that is the exception to

Fig. 6. An unusual example of multiple myeloma that has broken through the cortex of the bone and extensively invaded the surrounding tissues. Double spontaneous fracture occurred in this case.

the usual case of multiple myeloma. It is generally accepted that this condition is a central tumor of bone marrow origin that causes active absorption of the bony tissue with subsequent expansion of the periosteum. That this tumor has the power of invading the surrounding soft tissues is not generally accepted although we do find Ewing stating that after passing the periosteum the surrounding soft tissues may be definitely involved.

A male, aged 71, gave the history of bilateral rheumatic pains in the legs for the past fifteen years. Spontaneous fracture of the right femur occurred eight months before death. At this time both *x*-ray and clinical diagnosis of osteogenic sarcoma was made. Extension in a cast gave little or no relief from pain. Clinically the other bones of the body were not affected.

At autopsy the following notations were made: An ulcerating area 10x3 cm. on the lateral aspect of the thigh. A tumor mass is present, beneath the ulcer, which is attached to the femur. The soft tissues about the tumor are soft and edematous and extensively infiltrated by tumor tissue. On cut section the tumor is whitish in color except near the bone where it assumes a reddish color. The other bones of the body were carefully examined for tumor lesions. On the skull there were found several depressed areas which when examined did not prove to be multiple myelomas. The rest of the skeleton was negative.

Examination of the gross specimen shows two tumor masses in the shaft of the femur. A double fracture of the bone had occurred, the cortex of the bone being entirely destroyed in these areas. The soft tissues of the thigh show extensive infiltration by the tumor tissue. Microscopic diagnosis was multiple myeloma, the myeloblast being the type cell present.

V. ENDOTHELIOMA (EWING'S TUMOR)

This tumor generally involves the shaft of the long bones, producing a widening of the shaft apparently by spreading apart that lamellæ of the bone. It may involve the flat and short bones also.

Ewing states that the location on the shaft rather than at the ends of the bones and the absence of bone production distinguishes the condition from solid osteogenic sarcoma. While the failure of early and sharply limited bone destruction is contracted with the radiograph of telangectatic bone sarcoma. The benign giant cell tumors greatly expand the shaft over a sharply limited area and exhibit a bony capsule.

Histologically the tumor is composed of undifferentiated, round or polyhedral cells, sometimes arranged in perithelial manner about the capillaries or appearing in solid sheets between the capillaries.

A further fact as aid in diagnosis of this condition is the fact that it has the tendency to invade the neighboring lymph nodes; also these

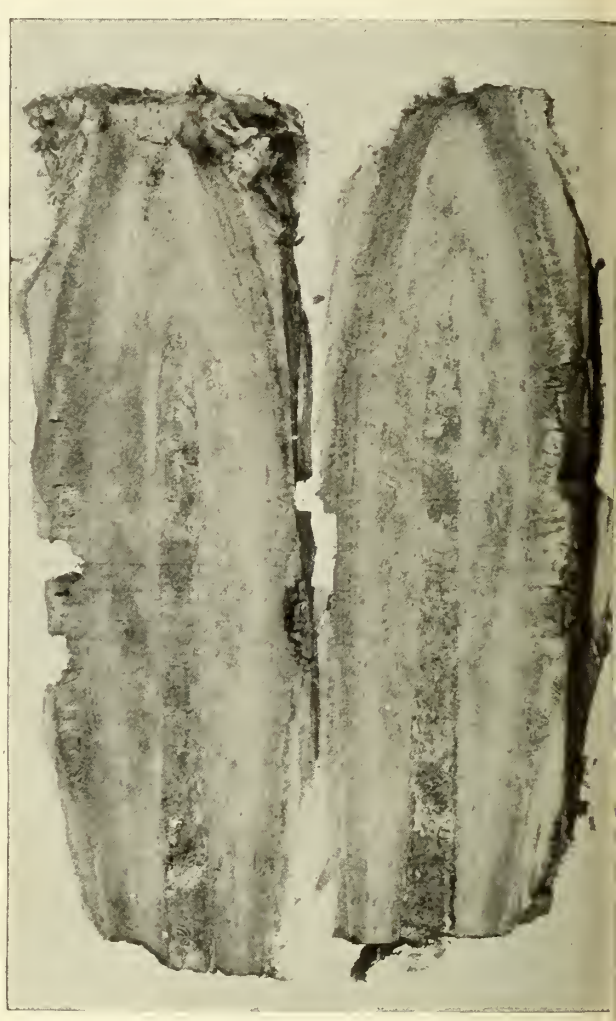

Fig 7. Ewing's tumor (femur)—Note the laminated appearance of the bone shaft; also the fusiform shape of the tumor.

tumors regress rapidly under radium and *x*-ray therapy. This point is made by both Ewing and Codman, although both express doubt as to the ultimate outcome of this method of treatment.

There was only one such tumor in our collection. It occurred in a male, aged 16, who experienced considerable pain for four and one-half months before a palpable tumor was manifested. The case was treated by amputation.

VI. ANGIOMA

Christensen found eight angiomas among 1,000 bone tumors. One case occurred in the third

and three in the fourth decade. Age was not given in the rest of the cases.

Ewing summarizes the condition as follows: "True angiomas may arise in the periosteum or marrow. They invade the outer layer of the bone or cause absorption of the shaft. Extensive angiomas of the skull have been observed." He cites a case of slowly progressive paraplegia in which a cavernous angioma of the dorsal vertebræ was found which caused collapse of the body of the vertebræ resulting in compression of the cord.

Codman summarizes the roentgenological findings as follows: "These tumors rarely expand the bone in the same manner as do the giant cell tumors but they may be distinguished from this condition by the fact that they have more and smaller loculi.

The chief problem in differential diagnosis is to separate these tumors from the telangectatic bone sarcoma, the angioma being considered entirely benign while the sarcoma is very malignant.

VII. METASTATIC TUMORS OF BONES

Metastatic tumors as a whole do not seem to have any definite predilection to bones. Joll reported fifty-eight cases; four and five-tenths per cent of bone metatasis occurring in 1,114 autopsies on malignant diseases of all kinds. Kaufmann reported 66.6 per cent of his cases of the prostate as having bone metastasis. Metastasis to the bones occurred in 52.3 per cent of carcinomas of the breast and in 34.6 per cent of the carcinomas of the thyroid. In 780 cases of malignant disease he found metastasis in 11.5 per cent; however, it should be noted that Kaufmann has reported only on carcinoma of the stomach, uterus, esophagus, rectum, thyroid, heart and prostate. Christensen collected thirty-three metastatic tumors of bones in his collection of 1,000 bone tumors.

Bone tumors of this nature rarely occur before the thirtieth year, while primary tumors of bone are most frequent before that age. Christensen reports only one case as having occurred before the thirtieth year. The youngest case in our collection is sixteen years; however, it is a metastatic sarcoma. The youngest case of metastatic carcinoma occurred in a female aged 35, the original tumor being in the breast.

The *x*-ray in the secondary tumors of bones is quite characteristic. It shows rapid destruction of both the medullary and cortical portions of the bones. The cortex is not expanded, and there is no evidence of bone formation.

Metastatic tumors of the bone concern us only in those cases where differential diagnosis from primary tumors in bone is difficult. With this point in view the following points are worthy of mention.

1. Complete and thorough examination of the body in case of any central tumor of bones; this procedure will eliminate practically every primary focus except tumors of the kidney, thyroid and adrenal body.
2. Pain is an unusual symptom.
3. Spontaneous fracture occurring without previous symptoms points to a secondary growth.
4. The thyroid and prostate should be examined with extreme care if there is present any bone tumor of doubtful nature.

Joll quotes Kanoky (Surg., Gyn. & Obs. 1916) as having found thyroid metastasis to the bone occurring in 41 per cent of cases without any obvious clinical enlargement of the thyroid gland. He also quotes Goebel as having collected eleven cases of metastasis from the thyroid which were treated radically on the assumption that they were primary tumors. That this same condition may occur in hypernephroma was found in one of our cases.

Joll states that if exploratory operation reveals either thyroid or renal metastasis, it is reasonable to do resection or even amputation. This conclusion is based on the fact that he has two cases well six and eight years after amputation for tumor where origin was in the thyroid. This seems still more reasonable when we find Stengel and Fox stating that thyroid metastasis usually gives a single metastatic growth.

In our collection there were eleven secondary tumors of bones, ten of carcinoma and one of sarcoma. Any figures concerning metastatic tumors occurring in bones suffer the criticism that these tumors are often not found at autopsy unless symptoms have called attention to the presence of the tumor. In our series, attention was called to the condition in ten of the cases, either by pain or the presence of a palpable tumor. The stomach was the primary site in two cases, kidney one, adrenal three, prostate one and breast one. In three cases the primary tumor was not stated. The metastatic sarcoma occur-

ring in the ribs had its origin from an osteogenic sarcoma of the femur.

One case is worthy of description.

A male, aged 45, had had a nephrectomy at the Mayo Clinic twelve years before, for hypernephroma. He received a slight injury to the left elbow and three months later a rapidly growing tumor was detected in the head of the ulna. *X*-ray picture showed complete destruction of the proximal 5 cm. of the ulna. There was no evidence of bone regeneration. The cortex of the bone did not show any expansion. Amputation was performed and a microscopic diagnosis of hypernephroma was made. At the time of the second operation no evidence of other metastatic focus could be found. This case is very interesting considering that the primary tumor had been removed twelve years before its metastatic growth manifested itself.

VIII. INFLAMMATORY CONDITIONS SIMULATING BONE TUMORS

Needless to say, this group of conditions existing in bones is carried in this classification merely because of the difficulties offered at times in differentiating them from primary bone tumors. A very brief discussion of each group will be given here, merely for the purpose of completeness.

A. OSTEOPERIOSTITIS

a. Luetic—The luetic periostitis, especially the gummatous form, may sometimes resemble a sarcoma. This type of periostitis may occur in the second or third stages of acquired syphilis or in congenital syphilis. The tertiary lesions of bones are, however, the more frequent.

The bones most commonly affected are the skull, tibia and fingers, although any bone of the body may be affected. The lesions are much less common in the more protected bones. Probably the influence of trauma is an influencing factor. Multiple bone involvement with a positive Wassermann reaction strongly suggests syphilis.

The *x*-ray findings of syphilis of the bone are quite characteristic. The flat bones present a peculiar moth-eaten appearance. In syphilis of the long bones the shafts show sclerosis and there is a peculiar wavy outline of the periosteum.

b. Tuberculous—Tuberculosis of the bones must always be considered in making a differential diagnosis; especially is this true if the lesion be located near a joint. Tuberculosis occurring in the shaft of long bones is very rare, while the lesions of the vertebræ and flat bones of the foot are common conditions. If tuberculosis does occur in the long bones it usually involves the epiphysis with early extension to the joint cavity. This is directly the opposite of the sequence of events in primary tumors of bones. In the latter conditions the joint is only involved very late in the disease process if at all.

c. Traumatic—Periostitis of traumatic origin usually gives a history of repeated and definite trauma. If the condition be acute, clinical symptoms usually accompany the picture so that the diagnosis is not difficult. In the chronic cases the occurrence of a discharging sinus very often accompanies the condition. That this condition can exist in chronic form without sinus formation, also without other clinical manifestations as fever and leukocytosis with only slight pain and moderate disability, is a well known fact.

X-ray may show bone destruction in the marrow cavity and cortex with thickening of the periosteum and some new bone formation. In these cases microscopic examination of tissue from the involved area is necessary before osteogenic sarcoma can be ruled out.

Twelve specimens of chronic osteomyelitis of the long bones were selected for the study. These cases were selected because of extensive involvement of the shaft of the bones without involvement of the neighboring joint. In no case was there any evidence of sinus formation. Review of the histories of these cases showed enough clinical evidence to be present so that an accurate diagnosis was made in ten of the cases. The remaining two cases were diagnosed osteogenic sarcoma and amputation was performed. Had biopsy been performed in these cases this grave error could have been avoided.

B. OSTEITIS FIBROSA CYSTICA

There is considerable divergence of opinion concerning the nature of this condition. Some competent observers consider it a neoplasm closely related to giant cell tumors, whereas others consider it to be an inflammatory growth akin to osteomyelitis or bone repair.

We know that the condition exists in several forms, namely: (1) solid osteitis fibrosa; (2) cystic osteitis fibrosa; (3) multiple bone cysts.

It is not definitely known whether these three forms represent the same process. Bloodgood writes as follows: "The etiology of this condition at the present time is unknown. Clinically

it is a benign lesion. Pathologically it is entirely a form of chronic inflammation. Biologically its entire tendency is to spontaneous healing with restitution of the affected part of the bone to

Fig. 8. Example of solid osteitis fibrosa cystica. Microscopically the structure of this central growth was that of a hard fibroma.

normal." In this nature it follows the biological history of all inflammatory conditions as follows: (1) reaction of tissue to unknown irritant; (2) production of new granulation tissue; (3) disappearance of granulation tissue with replacement of normal tissue and more or less residual scar formation.

The situation of bone cysts with rare exceptions is in the shafts and not in the epiphyses of the long bones. There is no *x*-ray evidence of new periosteal bone formation. The older writers undoubtedly considered the solid type of lesion to be fibroma occurring within the bone substance.

The condition is entirely benign. Spontaneous healing may take place with complete ossification of the tumor or the lesion may become cystic, showing later slow and imperfect ossification. If the cyst becomes very large, bending deformities and spontaneous fracture may occur.

Three cases of osteitis fibrosa cystica were studied in connection with this series. In every case pain was an early and prominent symptom. Tenderness and swelling was noted in two cases. Spontaneous fracture occurred in one case. In two of the cases the diagnosis of osteogenic sarcoma was made and amputation was performed. This error could readily have been avoided had biopsy been performed, for the microscopic picture of this type of lesion is very characteristic, the structure being that of a fibroma. Giant cells may be present. No mitotic figures are found.

This type of lesion offers such a definite clinical entity, and in view of the fact that it has not been proven to be of inflammatory origin, we feel that this group of lesions should be given consideration in the new classification of bone tumors under a separate heading.

C. MYOSITIS OSSIFICANS

This condition is purely an osteogenetic process. According to Ewing, it occurs at an early age, usually in subjects with deformities of the fingers and toes. It is often associated with multiple exostoses and progresses independent of any originating trauma or other known factor.

It is most likely to be confused with conditions of periostitis, most notably those of leutic or traumatic origin.

X-ray photograph shows layers of calcified material laid down parallel to the shaft of the bone. There is no involvement of the periosteum of the bone. The condition is entirely benign.

CONCLUSIONS

1. Microscopic examination should always be made of all osteogenic tumors in order to differentiate absolutely between benign and malignant tumors.

2. From a clinical standpoint there is no necessity of differentiating between periosteal osteogenic sarcoma and subperiosteal and medullary osteogenic sarcoma.

3. Telangectatic and sclerosing osteogenic sarcoma should be considered as types of subperiosteal and medullary osteogenic sarcoma rather than separate anatomical types of the malignant osteogenic sarcoma.

4. There should be included in the new classification a group of paraosteal sarcomas, because of the difficulty in differentiating certain paraosteal sarcomas from those of osteogenic origin.

5. Ostitis fibrosa cystica should not be in-

cluded under the group of conditions simulating bone tumors. Rather it should be included in the classification as a separate group of bone lesions that offer a distinct problem in prognosis and treatment.

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ACTINO-THERAPY AND ITS APPLICATION TO PEDIATRICS*

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The value of sunlight as a healing agent has been known for centuries. The Egyptians knew of it. Herodotus and other Greek writers frequently mention it as well as Roman writers such as Pliny the Younger and others. The ancient Teutonic races exposed ailing children to sunlight on shady beaches. Scattered references to light therapy are found in the medical literature of all times; but it is only within the last twenty years that it has really become the subject of scientific study and is receiving ever increasing clinical application.

The value of sunlight in the treatment of disease is definitely established. In spite of its wide use, however, and its acknowledged virtue, comparatively little is known of its action.

The shorter wave lengths of the solar spectrum are the most active. In the artificial sources of ultraviolet light, it has been found that if they are present in too large an amount they may be even detrimental owing to their great chemical activity. Some observers hold that all the rays of the sun have a part in its beneficial action. In many instances it is not possible to obtain with artificial lights the same results you can obtain with sunlight.

There may be a selective response of different body cells to different rays. This could explain the more beneficial results obtained with sunlight. On the whole, it seems to be the best form of radiant energy available for treatment of disease.

Most of the experimental work so far has centered upon that part of the solar spectrum which transmits the ultraviolet rays. It has been shown that these are chemically and photodynamically very active. Their great therapeutic possibilities are due to these characteristics. Less is known about the longer rays in the infra-red portion of the solar spectrum; but they, also, seem to have important functions.

The ultraviolet rays of the sun constitute less than 1 per cent of the total solar radiation. They

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are characterized by exceptionally slight power of penetration. They are easily absorbed by dust, moisture, or smoke, and by dark clothing. Ordinary window glass filters out all the most important rays. The formation of pigment in the skin is due to the ultraviolet ray between 302 and 297 millimicrons.

There are marked diurnal and seasonal variations in the portion of the solar spectrum containing the ultraviolet rays. The diurnal variations vary at different times of the year. Ultraviolet rays are weak in the early morning and toward evening. They have their greatest intensity between the hours of 10:00 A. M. and 1:00 P. M. The amount of effective ultraviolet radiation is very low during the winter months and much greater during the summer months.

The zenith distance of the sun from the earth or its objects is an important factor. The more it is decreased the shorter and more active the ultraviolet ray becomes. This fact doubtless explains the greater solar activity in mountainous regions. The shortest ultraviolet wave length which reaches the surface of the earth is 290 millimicrons. Reflecting surfaces such as ice, snow and water enhance the power of the ultraviolet ray. This effect is particularly noticeable on the seashore or at high altitudes where there is snow.

Artificial sources of light as compared with sunlight have both advantages and disadvantages. They offer the best substitute we have for natural sunlight and are always available when sunlight is not or when for various reasons it is least effectual. The disadvantage of artificial light sources lies chiefly in certain limitations. The rays of some portions of the spectrum, notably in the infra-red, are not transmitted to the same degree as in the natural solar spectrum, while the rays in the ultraviolet section are transmitted to a much greater degree and in much shorter wave lengths than is the case in the solar spectrum. The shorter rays are so intensely active that they become harmful.

The carbon arc light is probably the nearest approach to natural sunlight which we possess.

There is no doubt that light is capable of far-reaching physiological effects. The ultraviolet ray of the sun can increase the white cells of the blood, also the red cells and the hemoglobin. This effect is even more certain if heliotherapy is carried out at higher altitudes. It is reported that blood serum, calcium and phosphorus can be increased. The beneficial effects in tetany and rickets probably come about in this way. It has been shown that ultraviolet radiation can produce antirachitic factors in plants, oils, and vegetables.

It is stated that blood pressure is definitely decreased and that the general metabolism can be increased by heliotherapy. Small doses of radiation seem to have a stimulating action upon tissue. Larger doses seem to produce deferred physiological changes while still larger doses can be destructive. The ultraviolet ray seems to have definite bactericidal powers. The effectiveness of light treatment in suppurating wounds and sinuses is probably explained by this fact.

Pigmentation is a protective quality of the body against excessive activity or effect of the ultraviolet ray. It may have other significance or usefulness not known at the present time. Excessive pigmentation may inhibit the effectiveness of the ultraviolet ray. The susceptibility of the negro, for example, could be explained in this way. It is a well known fact that brunettes are far less reactive to light, especially if given in massive dosage, than are blondes or red-haired subjects.

Heliotherapy or other forms of artificial light therapy are widely and effectively used for all forms of surgical tuberculosis in children and for suppurative conditions about bones and joints, if they are quite superficial or have led to sinus formation.

Results published by Rollier of Leysin, Switzerland, and Hyde of Perrysburg, New York, are remarkably good. It is quite likely that other hygienic factors such as exposure to the air, rest, dietetic measures, and in Rollier's Clinic the high altitude and pure mountain air may have contributed largely to the good result; but there is hardly a doubt that heliotherapy was the chief beneficial factor.

Light treatment is equally good for all forms of glandular enlargement and inflammation with or without suppuration. Rollier reports cures in 85 to even 100 per cent of his cases. Hyde's results in the lowlands of Perrysburg, New York, were not quite so good but reached well above 50 per cent.

Cutaneous conditions such as lupus and all forms of pyodermia react very favorably to light therapy. Serous effusions, tuberculous or

non-tuberculous, into joints or into the pleura or peritoneum are often benefited by light treatment and disappear in a remarkably short time. Certain chronic forms of conjunctivitis, particularly phlyctenular ulceration as it occurs in the scrofulous type of child, respond well to light therapy if carefully used. The same is true of chronic forms of otitis media. As to the value of light in the treatment of pulmonary tuberculosis, there is much division of opinion. It seems that one must be cautious in the use of heliotherapy. The artificial sources of light are apparently more safe and useful. Many observers advise against the use of any form of light therapy in tuberculosis of the chest. They believe that it can activate quiescent lesions.

Light therapy is definitely contra-indicated in pulmonary tuberculosis if there is hemoptysis, if the pulmonary tuberculosis is accompanied by advanced cardiac disease, if there is high fever and a very active process and if its use occasions recurrent headaches, nervousness, insomnia and elevation of temperature.

The use of the quartz lamp is generally much less likely to cause untoward symptoms and will give better results in pulmonary tuberculosis than heliotherapy. On the whole, the results with light therapy in pulmonary tuberculosis are really very good. Under its influence cough and expectoration often lessen decidedly. Pronounced anorexia disappears or is lessened. The weight increases and the general well-being of the child improves. Brunette children do better than blonde or those with red hair, and the well nourished better than the emaciated.

There are some non-tuberculous and non-surgical conditions in which light treatment gives very good results. Its beneficial effect in tetany and rickets is definite and striking. It is a valuable aid in the treatment of the anemic asthenic type of child and in the case convalescing slowly from chronic disease. It is helpful in protracted forms of chorea and in chronic non-surgical forms of arthritis. These conditions improve rapidly under its influence.

Whether the choice should be heliotherapy or quartz lamp depends somewhat upon the condition to be treated. In purely pulmonary tuberculosis, the quartz lamp is generally more useful. In surgical tuberculosis sunlight is probably more effectual. In very superficial lesions, however, and in skin lesions generally, with or without suppuration, the artificial sources of light are a better choice. Diseases of the bones and joints, tuberculosis of the peritoneum and intestine and phlyctenular ulceration of the eye do better, on the whole, with artificial light therapy than sunlight.

Less caution is necessary in the use of heliotherapy than in the use of the artificial light. Proper dosage of the light is important. Small doses stimulate while large doses can destroy. In the use of heliotherapy, the method of gradual exposure advocated by Rollier is probably the best. Chilling and unnecessary exposure to winds must be avoided. The period of exposure from which one obtains the greatest benefit has not yet been accurately worked out.

Blondes and red-haired patients are most sensitive. The rate of exposure must not be too rapid with them. Progressive development of pigmentation permits more prolonged exposure to sunlight and artificial light and in the former can reach the point where exposure for almost the entire day is possible. It is well to protect the eyes and also the scalp during exposure. The dosage of the artificial light is gauged largely by the degree of reaction produced in the lesion. It should always be small at first both as regards time of exposure and the frequency with which the treatment is given.

There is much about the photodynamics of light that is not yet understood—for example, its action upon protein substances, its changed action upon substances in the presence of fluorescent bodies, its activation of inactive substances such as the sterols.

It is difficult to say to-day just what the limitations or possibilities of light therapy are, or will be. This will come with a future better understanding of this marvelous force of nature and form of energy of the universe.

STERILE PURULENT EFFUSIONS COMPLICATING INDUCED PNEUMOTHORAX

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Knowing from personal experience and from the innumerable reports of other workers that practically all pneumothorax patients will develop pleurisy with serous effusion some time during the course of their treatment, it is a matter of no great moment when this effusive process actually occurs even though it be ushered in with an acute onset. But our equanimity receives a severe jolt when upon aspirating one of these effusions we note that it has become purulent, the presence or absence of tubercle bacilli making little difference.

My first encounter with uncomplicated tuberculous empyema seven years ago precipitated a surgical consultation and after the facts were known the surgeon very wisely put away his rib resection instruments and advised aspiration. This I did most assiduously until both the patient and I became discouraged as the fluid continued to mock my feeble efforts by continuing on its effusive way imperturbed till the patient died.

Then I began consulting surgical text-books and systems of surgery and found that interest in tuberculous empyema was a very minus factor. Aspiration for the relief of cardiac and respiratory embarrassment was the only treatment mentioned and this was unusually supplemented by the encouraging and helpful news that most such fluids kept on forming forever. Nothing of a more active nature even remotely helpful, as far as a cure was concerned, could be found.

And then my interest in pneumothorax therapy led me into the literature of years ago and in reading John B. Murphy's Oration in Surgery before the American Medical Association in 1898, I noted his recommending using formalin in glycerine for chronic empyemas. Not long after that Kalb reported seven cases so treated in the American Review of Tuberculosis and cited Murphy's work.

I pounced upon this idea with avidity. Following Kalb's suggestion to inject half as much glycerine solution as fluid removed I nearly killed the first patient upon whom I tried it. The reaction was terrific, and it took no exceptionally brilliant mind to perceive that a measure so drastic was far from ideal. Further experience soon showed that by starting as low as ten or fifteen c.c. and increasing the amount gradually accomplished the desired results more slowly to be sure but without unpleasant reaction.

The injection of 2 per cent formalin in glycerine does clear up a certain percentage of tuberculous empyemata. I have had four such cases who have no fluid today, having been dry for a year or more. I have also noted the tendency towards an obliterating pleuritis is quite marked following the use of this solution.

Another bright beam of hope broke through the disappearing gloom when Archibald reported a case of pyopneumothorax cured with extrapleural thoracoplasty, applying the old surgical principle of pleural apposition to obliterate the empyema cavity. This measure also had the very definite advantage over other radical surgical measures for empyema of keeping the lung collapsed, a very desirable attribute for cases such as we are discussing. There is no question that thoracoplasty is a definitely valuable addition to our limited armamentarium for treating tuberculous pyothorax. I have had four perfect results from it.

All the other remedies that have been suggested such as gentian violet, mercurochrome, irrigation with normal saline etc., I have tried with high hopes, religious fervor and complete failure.

The literature makes definite claims that simple aspiration with air replacement will control a few of these stubborn empyemas. I have had one case in which aspiration alone was successful. Two other patients after persistent and prolonged effort are showing results. One has a clear fluid again and effuses but 100 c.c. in from six to eight weeks. The other develops about 200 c.c. of slightly turbid serous fluid in about the same time. I rather expect these two cases to dry up some time during the next year.

So far as I have been able to judge, light therapy has not helped in these cases and in those who have normal temperature and normal weight, rest in bed is of no avail.

It then appears that we have three measures which have been successful to a limited degree in

treating uncomplicated tuberculous pyopneumothorax. Simple aspiration should be tried first but it is wise not to persist too long at it alone lest fistulæ through the chest wall develop. Two per cent formalin in glycerine is efficacious in a certain number and should always be tried before turning to surgery. Extra-pleural thoracoplasty is the court of last resort but should not be postponed so late that the patient has passed into the class of poor surgical risks.

REPORT OF A CASE

Miss J. B., aged 22, a clerk whose previous history had been unimportant, was well up to the summer of 1919, when she began to experience undue fatigue. She saw no doctor till April, 1922, at which time she had a copious hemorrhage. Pulmonary tuberculosis was diagnosed and she entered the pavilion of the Aneker Hospital, where she was found to have a far advanced lesion in the right lung.

May 11, 1922. A right-sided pneumothorax was induced and a good collapse was followed by complete subsidence of symptoms.

May, 1923. An effusion formed, which was not aspirated.

November, 1923. Choked on a piece of peanut candy, coughed violently and raised two cupfuls of purulent material. A bronchial fistula was proven by injecting methylene blue into the pleural cavity.

The patient was aspirated periodically till October, 1924. The fluid remained sterile despite the fistula, which remained open. Formalin in glycerine was used with care, the fluid became clear and then purulent again. Forty-eight aspirations in all were performed.

Oct. 30, 1924. First stage of thoracoplasty was performed.

Nov. 15, 1924. Second stage of thoracoplasty. Inasmuch as insufficient amount of ribs was removed some pneumothorax cavity remained. Aspirations were continued.

March, 1925. Aspiration prior to a third stage operation showed that the fistula had closed. With a large syringe and two-way stop-cock, was able to pull the lung over to chest wall. The thoracoplasty had permitted sufficient lung relaxation to take place so that the fistula closed.

May, 1925. The patient left hospital and is well and working as a nurse.

Points of interest:

1. A tuberculous empyema with bronchial fistula remained sterile more than a year.

2. Thoracoplasty relaxed the lung, closing the fistula.

3. Pleural apposition resulted in a cure.

THE CONTROL OF INFECTIONS IN WOUNDS OF BONES AND JOINTS*

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It is desired to call to your attention three fundamental rules that should apply in the treatment of wounds.

1. Aseptic—that is—clean primary operation.
2. Post-operative protection of the patient against secondary or mixed infection.
3. Rest for the injured parts in correct position until healing occurs.

These rules apply with equal importance whether or not the injury or the surgical procedure is in a clean or in an infected field.

It is respectfully submitted that in all of our hospitals one or all of these rules are being constantly violated.

In a few hospitals, Rule 1 is not carefully observed. Post-operative infections that should have been avoided do occur. In general, however, in the matter of aseptic technic in the operating room, American surgeons as a class have and deserve an excellent reputation.

Rule 2 is being disregarded or disobeyed in the majority of hospitals. In the class of cases in which it has been customary to resort to daily or more frequent secondary dressings, after operations, such dressings are done either very hastily by the surgeon himself, by internes, or by nurses in a manner that almost invariably contributes secondary infection from the very beginning. In some cases, this secondary and mixed infection makes very little difference to the patient, who is always, to a certain extent, able to defend himself. In bone and joint cases, however, delay in healing, or even serious complications, may be and often are the results of this inadequate post-operative treatment.

With regard to Rule 3, one may say that it is rarely observed, either because immobilization is considered to be unimportant, or because with frequent dressings, sometimes of a complicated character (Carrel-Dakin), the injured part or the wound, or both, are frequently disturbed in the supposed interest of wound treatment. For these and other reasons, traumatic and surgical wounds do not heal as promptly as they should,

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avoidable complications occur, and deformity and disability of the patient are far more frequent and more serious than they should be.

After several years of study of this particular matter, I have become convinced that most of the difficulties above alluded to are the result of over-enthusiastic and ill-judged efforts to carry out antiseptic wound treatment.

Those who have read the original communications of Lister himself will remember that even in his enthusiasm for the antiseptic method, he did not lose sight of the importance of excluding germs from wounds. Moreover he was fully aware of the fact that the human organism is well equipped with defensive and reparative forces which enable it to successfully wage its own battle against infections of certain kinds and of certain degrees.

Since the time of Lister, there has been such a tremendous effort to find the ideal antiseptic, that almost every substance in the material universe has been tried as a dressing for wounds. Unfortunately, also, empiricism has been allowed to govern us to too great an extent in our employment of these antiseptic agents. In other words, we have been led astray many times by the same old fallacy—that because a wound healed after the employment of a certain antiseptic, that particular antiseptic brought about the cure.

Moreover, because we have been in considerable doubt as to just what our bodily defensive forces really consisted of, and because the physiologists and chemists have been unable to put their fingers on the details of our defensive mechanism, we have been disposed to rely upon outside agencies and to disregard our protective forces to entirely too great an extent. It is against this reliance upon externally applied antiseptics and the consequent interference with the principles of rest for injured parts and for wounds that I desire to protest.

A number of our professional predecessors have called our attention to the importance of rest in the treatment of wounds (Seutin, Velpeau, Larrey, Hunter, Hilton, Thomas).

"Of all surgical agencies none so beneficent as compression, none requiring more delicate manipulation, none so inadequately appreciated. Under a smooth and uniformly, while lightly, compressing bandage, applied to the head, the trunk, or the limbs, extravasations of blood are absorbed, the healing action is promoted, and a soothing influence is exercised. There must be no constriction—only equable adaptation of surface to surface, with the light pressure which always comforts. There must be no squeezing like that of an old college friend's hand, when seen after a long absence; such pressure as that, on tender parts, is intolerable constriction. The soothing surgical pressure is like that which you interchange with the hand of a lady, when the pleasure of meeting her is tempered by a respectful regard. Your hand adapts itself to hers, and gently presses it wherever it can touch it, but nowhere squeezes it for fear of offending. Such pressure, when employed by the surgeon in the treatment of injuries, always soothes and heals." (Gamgee.)

Since the days of Lister, however, it has never been possible to interest the profession at large in any other method than the external antiseptic treatment of wounds. I am sure that the pendulum of Listerism has swung entirely too far. We have altogether too much confidence in our antiseptics. We depend upon them to sterilize unclean instruments, unclean hands, and unclean wounds. We neglect to provide favorable physical conditions in our patients for their own defense against invading organisms, and to a certain and considerable extent fail to obtain prompt and efficient healing of wounds, and recovery of our patients.

"M. Guerin lays it down as a rule that a wound once dressed with cotton wool is not to be dressed again until the twentieth or twenty-fifth day. He very much objects to such dressings being carried out in the wards, and urges that the operating theatre is the proper place for them. His house surgeon, Monsieur Raoul Hervey gives, amongst many other cases, one of gun-shot injury of the shoulder, necessitating amputation at the joint; the soft parts were so extensively destroyed that no cover could be obtained. Cotton wool dressing, applied with powerful compression, to the stump and the whole of the chest, was not changed until the twenty-first day after the operation; the second dressing, nineteen days later. The patient never felt the slightest symptoms of pain or uneasiness, suppuration was scanty, and recovery perfectly satisfactory." (Gamgee.)

I should not venture this criticism of present conditions, unless I had a remedy to offer. The remedy which I propose rests upon the original propositions laid down—that is to say, (1) a thorough aseptic primary operation; (2) the avoidance of post-operative dressings and infection to as great an extent as possible; and (3) immobilization in correct position for all injured parts until healing has been established or is complete.

The manner in which this is accomplished is

as follows: In infected wounds of whatever size and extent, the primary operation (which must be carried out under the most favorable aseptic conditions possible) must be done with two primary considerations of cleaning up the wound and providing adequate drainage. Then, the dressing at operation must be a dressing that will permit drainage, that will be non-irritating, that will make compression, and that will take up the post-operative drainage to as great an extent as possible. The immobilizing device (plaster of Paris is preferred) must then be applied immediately with the injured parts in correct position for final healing. Half-hearted splinting devices will not do—immobilization must be thorough, efficient, and permanent.

All of the above constitutes the operation. Following the operation, neither the patient nor the wound must be disturbed. The usual difficulties of copious post-operative drainage, secondary abscesses, and other complications will usually be avoided. Within a few days, fever, pain, muscle spasm, and the other disagreeable post-operative symptoms will usually have entirely subsided. When the time for secondary dressing arrives (from two to six weeks) the amount of discharge will be found to be trifling, as a rule. Inflammation, swelling, and other local symptoms will have disappeared, and final healing will be only a matter of a little time. The technic of the secondary dressing is approximately the same as that at the primary operation, except that only occasionally is a new cast required. Ordinary cleaning up of the wound with tincture of iodin and alcohol, and a vaseline dressing covered with sterile gauze is usually sufficient. All this can be done through a window in the cast, as a rule.

Thousands of substances and combinations have been proposed for application to wounds. Nearly all of these are injurious and the remainder are of doubtful efficacy in the promotion of healing. The protected patient has within himself the valuable and necessary forces for healing if they can be properly conserved. All of the ancients were more or less aware of the value of rest—the importance of the exclusion of infection is the thing that is new. If we may properly and efficiently observe these two principles of rest and asepsis, then and not until then can antisepsis be put in its proper place.

DIVERTICULA OF THE DUODENUM*

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A few years ago an unusual case[1] which Dr. V. C. Hunt and I reported, stimulated my interest in this subject and since then I have made a careful study of the literature.

I found 162 autopsy reports, 136 *x*-ray reports and sixteen surgical cases. Nagel[18] has since reported twenty autopsy cases from the Mayo Clinic and I have collected twenty-seven cases from there, making in all 361.

In 1710 Chomel[2] first described a diverticulum of the duodenum, which contained stones, found at autopsy. Other autopsy reports were all that appeared in the literature until Bauer[3] reported the case he treated surgically in 1912. This case contained two diverticula in the second part of the duodenum, producing obstruction. A gastroenterostomy was done but the patient died. The first case to be diagnosed before operation was reported by Forsell and Key[4] in 1915. The diagnosis was made by *x*-ray. This diverticulum was removed and the operation was followed by complete relief of ulcer-like symptoms. Case,[5] Cole and Roberts,[6] Spriggs,[7] Penhallow[8] and others have reported many cases diagnosed roentgenologically, few of which were subjected to surgery.

I will not go into the different classifications other than to group them into simple and complicated cases. The simple cases, with rare exceptions, are of interest only as incidental findings and the complicated cases are of interest because of their indications for surgical treatment.

The following are the theories advanced as etiological factors in their production:

1. They are congenital and represent abortive attempts to form supernumerary pancreases (Lewis and Thing,[9] Leutelle, Falconer, Tandler and Keith).

2. They are congenital in that the pancreatic anlages cause local defects in musculature with pouching occurring with age and increase in duodenal pressure (Linsmayer).[10]

3. They are due to traction of the liver on the

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duodenum through the bile ducts during fetal life (Keith).[11]

4. They are due to weakness in the fold of Vater (Fleischmann).[12]

5. They are due to traction from without such as gallbladder or pancreatic disease (Roth).[13]

6. They are due to pressure from partial obstruction below (Jachs,[14] Spriggs).

7. They are due to weakness at the points of penetration of blood vessels (Hanseman).[15]

8. They are due to fatty infiltration of the intestinal wall (Fischer).[6]

9. They are the result of crushing trauma (Siegrist).[17]

10. Robertson and Hargis,[18] who measured the distance between the pylorus and the ampulla of Vater in a large series of cases, found that this distance in patients with even minute duodenal ulcer scars was shortened by several centimeters. As most duodenal ulcers are located along the anterior superior border of the duodenum, most of the shortening takes place along this border, leaving the inferior border redundant and a favorable location for the formation of diverticula.

Any of these theories may play its part in the cases reported by their authors. This last suggestion by Robertson and Hargis is especially interesting as duodenal ulcer occurred in association with 30 per cent of the surgical cases reported in the literature and in 80 per cent of surgical cases at the Mayo Clinic. Most of the diverticula needing surgical treatment have been in association with inflammatory conditions in the immediately adjacent organs.

The following table shows the age incidence in all the cases in which this information was given:

Age	Cases
20 – 30	8
30 – 40	13
40 – 50	17
50 – 60	32
60 – 70	17
70 – 80	10
80 – 90	4
Youngest 20—Oldest 84.	101

It is interesting to note that most of them occur in the sixth decade, a time at which degenerative changes usually begin to take place and at a time when pressure disturbances have had a long time to act.

There were sixty-one males and forty-four females. One might assume that the greater pressure changes in the abdomen of the male have some bearing on the preponderance in their sex.

The size of these diverticula may vary from 1 cm. in diameter to that of a large pathological curiosity reported by Pilcher[19] into which the duodenum opened and from which the jejunum passed.

They may be single or multiple. There were twenty-four cases with two diverticula, five with three, four with two and one with five. Four had diverticula in other parts of the gastrointestinal tract and one of these had in all four hundred diverticula.

Most of the diverticula in cases not associated with ulcer occur in the immediate vicinity of the ampulla of Vater and are closely associated with or projecting into the pancreas. Those cases associated with ulcer occur in the first part of the duodenum. The remaining cases, which are few in number, may occur anywhere.

It is particularly noteworthy that the large majority of these diverticula which occur in the region of the ampulla and project into the pancreas would escape recognition not only clinically, unless picked up by the *x*-ray, but by the surgeon at the operating table, as well.

The majority of the surgical cases have associated pathological conditions which are usually responsible for the production of the symptoms of which the patient complains. Of the surgical cases I will speak later.

In most of the autopsy and *x*-ray cases the diverticulum is but an incidental finding and plays no part in the cause of death or symptoms. The great incidence of these cases which are unrecognized is impressed upon us by the reports of Baldwin,[20] Schüppel,[21] Nagel,[18] Spriggs,[7] Penhallow[8] and Carman,[21] which are as follows:

1. Baldwin found fifteen out of 105 duodenums at autopsy to have diverticula, all merely incidental as far as the cause of death was concerned.

2. Schüppel found seven in a series of forty-five autopsies and one in a series of 200 autopsies.

3. Nagel found twenty cases, 2.2 per cent of

the duodenums examined at autopsy in the Mayo Clinic during the period from July 1922 to February 1924. In none of these cases had the patients complained of symptoms referable to the diverticula.

4. Spriggs found ten cases in 1,000 *x*-ray examinations, only one of which was attacked surgically.

5. Penhallow found eleven cases in 2,200 *x*-ray examinations, one of which was surgical.

6. Carman stated that diverticula occurred in association with 1 per cent of all duodenal ulcers subjected to *x*-ray examination.

Rarely do the simple cases of duodenal diverticula produce symptoms unless from inflammatory changes in the sac itself. There are cases, however, in which real symptoms have been produced as proven by the success of surgical interference. These cases are as follows:

1. Forsell and Key[4]—Woman forty-one years of age had ulcer-like symptoms consisting of mid-epigastric pain coming on periodically, several hours after meals and in the early morning hours, sometimes relieved by taking food. There was slight tenderness over the mid abdomen. Stomach acids were normal. *X*-ray examination disclosed a shadow near the duodeno-jejunal flexure which remained four days. At operation the diverticulum was excised and no evidence of inflammation was found. The patient was entirely relieved of her symptoms. The reporters felt that the symptoms were caused by the inability of the diverticulum to empty.

2. Siegrist[17]—Male forty-eight years of age whose abdomen had been caught between the coupling pins of two railroad cars thirteen years previously. He was operated upon for epigastric hernia which failed to relieve the symptoms of stomachache, anorexia and general loss of strength which continued to appear periodically. A tumor was felt in the region of the gallbladder. The *x*-ray examination demonstrated a shadow connected with the duodenum which remained after the barium had passed on. At operation a cystic tumor was felt in the head of the pancreas, dissected out and excised.

3. Lewis[22]—Female thirty-six years of age who first noticed epigastric pain six years previously. It occurred from two to three hours after meals and gradually increased in severity until the next meal, when ingestion of food gave relief. Hyperchlorhydria was found at that time and treatment for this relieved the pain. Three years before entering the hospital pain developed in the right upper quadrant, which came on gradually, increased steadily in intensity and at times would radiate to the scapula and right shoulder. This pain was relieved by taking soda and lying on the abdomen (note the lying on the abdomen). The pain during these last three years would come two or three times a week and frequently was very severe. For the last two weeks this same type of pain with the same radiation had been more or less constant. Jaundice had been noticed a day or two after some of the more severe attacks. Examination disclosed a point of tenderness below the right costal margin in the gallbladder region. *X*-ray examination of the gallbladder and kidneys was negative and a probable diagnosis of cholelithiasis was made.

At operation a sessile diverticulum was found just on the duodenal side of the pyloric vein. No other pathological condition could be demonstrated and the diverticulum was invaginated into the duodenum and the defect in the musculature closed with a purse string and several interrupted sutures. The pain of which the patient complained subsided immediately and remained so during the two months period over which the patient was followed.

The diverticulum in the case of Forsell and Key produced symptoms probably on account of its inability to empty itself. The same may be supposed in the case reported by Siegrist. The case reported by Lewis is an example of the cases influenced by pressure and postural changes.

There were four cases of simple diverticula which were definitely acutely or chronically inflamed. The following case reported by Huddy[23] was acute:

A married woman twenty-seven years of age with no previous abdominal symptoms was taken suddenly ill with epigastric pain of a dragging character settling in the right hypochondrium accompanied by vomiting, temperature 101.3, pulse 108, marked tenderness and rigidity over the right rectus. Diagnosed acute appendicitis. At operation the appendix was found normal. A diverticulum one inch in diameter, retroperitoneal, thin walled and black, was found between the gallbladder and duodenum, which was dissected out and excised. The neck was purse stringed. There was much bleeding and further invagination had to be abandoned and the posterior peritoneum was closed and lateral stab drainage left. Three days after operation fistulous discharge from the lateral stab wound occurred and continued until the seventeenth day. Perivateran type.

Maclean[24] reported the following case with recurrent inflammation:

A married woman, fifty-eight years of age referred with a diagnosis of diverticulitis of the duodenum. Cholecystectomy four years before for symptoms identical with those complained of at the present time, *i.e.*, recurrent attacks of epigastric pain, gas and vomiting. Thirty-eight gallstones were found in the gallbladder. Following operation the attacks were less severe and less frequent for a while, but soon increased in frequency and severity. After eating, gas formed and was accompanied by distressing pain below the ensiform cartilage referred through to the back and up to the right scapula. Morphine was given for pain at

times. During attacks there was spasm of the right upper rectus with a leucocyte count of 14,400. Duodenal drainage was attempted twice. Instillation of magnesium sulphate produced severe pain and drainage had to be discontinued. *X*-ray showed a stomach atonic and slow, with marked retention. A diverticulum was seen in the second part of the duodenum. At operation the pancreas was found thick, hard and nodular from the head to near its tail. A specimen was taken and a smear made from its cut surface. The duodenum was opened and the index finger was inserted into the diverticulum as a guide in order to dissect the sac out of the head of the pancreas and invaginate it into the duodenum and ligate. The duodenum was closed and a drainage tube left down to the incision in the pancreas. The tissue from the pancreas was inflammatory tissue with areas of round cell infiltration and total destruction of pancreatic structure. The smear contained bacillus coli and staphylococci. Eleven months after operation the patient was reported free from all symptoms with a gain of twenty-six pounds in weight.

The other two cases of simple diverticula with inflammatory processes along with the two just given in detail furnish examples of cases which can have acute or chronic inflammatory conditions in the diverticula demanding surgical interference.

The rest of the surgical cases reported in the literature and all the cases I found at the Mayo Clinic had associated pathological conditions which accounted in nearly every case for the symptoms with one exception and that was the effect of pressure changes in the abdomen as described before.

The *x*-ray is the only reliable means we have of making a diagnosis of diverticulum of the duodenum with the exception of the suggestion offerred by the production of symptoms with changes in intra-abdominal pressure or posture. In every surgical case in which the *x*-ray was used for diagnosis it failed but once. The demonstration of the diverticulum filled with barium which persists or not after the barium passes on, is the method of *x*-ray diagnosis.

The procedures followed in the simple diverticula have already been described, as have two of the simple diverticula with inflammatory conditions. The other two cases in which the diverticula were the seat of inflammation are as follows: (1) Cullen,[25] diverticulum adherent to gastro-colic omentum with gastroenterostomy and relief of all symptoms. (2) Basch,[26] diverticulum with periduodenal adhesions and the diverticulum excised and a posterior gastroenterostomy done with relief of symptoms.

This finishes the surgical procedures in cases of diverticula which were not associated with pathological changes in other organs.

Case[27] reported a duodenal diverticulum associated with cholecystitis, pancreatitis and an incompetent ileocecal valve. A cholecytectomy, appendectomy and repair of the incompetent ileocecal valve were done. The diverticulum was not disturbed. Of six cases with ulcer present a gastroenterostomy was done in five and a Billroth No. 2 resection including the ulcer, diverticulum and pylorus was done in the sixth. In the five cases in which a gastroenterostomy was done, the diverticula were dealt with as follows: (1) Invagination of the sac; (2) excision of the sac like an appendix; (3) excision of the diverticulum; (4) cautery destruction of the diverticulum with suture of the duodenum; (5) nothing done to diverticulum.

The following are the surgical procedures followed out in the surgical cases at the Mayo Clinic: Six of the Mayo Clinic cases did not have ulcer, and of these, one had a small diverticulum and chronic appendicitis for which an appendectomy was done with no relief of symptoms. A second had cholecystitis with stones, appendicitis and a very small diverticulum for which a cholecystectomy and appendectomy were done with no relief of symptoms. A third had a diverticulum on an angiomatous base and cholecystitis for which a cholecystectomy and cautery excision of the diverticulum were done with relief of symptoms. A fourth[1] had a pyloric tumor with fistula to the gallbladder. The diverticulum contained stones and was removed by a posterior Polya and a cholecystectomy was done. A fifth had a common duct stone with cholecystoduodenal diverticulum fistula. The diverticulum was excised and a cholecystectomy and choledochostomy done. The sixth had a chronic appendicitis with few light adhesions around the gallbladder and diverticulum of the duodenum. An appendectomy was done and the diverticulum considered of no consequence.

Twenty cases had associated duodenal ulcer and of these twenty, three had in addition cholelithiasis. One had a gastrojejunal ulcer and in this case the diverticulum was closed with running catgut, following which the gastroenterostomy was taken down with reëstablishment of the

continuity of the stomach and jejunum. In the three cases which had cholecystitis with stones in addition to ulcer, a cholecystectomy was done with the other procedures. In fifteen cases a posterior gastroenterostomy was done. The pylorus was blocked in one of these cases and in three cases the diverticula were turned in, in addition to the gastroenterostomy. Nothing was done to the diverticula in the other twelve cases in which gastroenterostomy had been done.

In the five cases with duodenal ulcer for which a gastroenterostomy was not done the following procedures were executed:

1. A Billroth No. 1 resection was done with removal of the pylorus, ulcer and diverticulum.

2 and 3. A Finney type of pyloroplasty, with utilization of the diverticulum.

4. A simple Finney pyloroplasty.

5. A Finney pyloroplasty with excision of a V-shaped portion of the diverticulum.

CONCLUSIONS

1. Diverticula of the duodenum occur frequently and rarely are productive of symptoms unless they are the seat of inflammation or cannot empty readily.

2. Nearly 70 per cent of the simple diverticula not associated with ulcer are of the perivateran type and are either intimately associated with or buried in the head of the pancreas, thereby rendering them difficult of detection.

3. The *x*-ray is the best diagnostic means at our disposal.

4. The only symptom of any value is the production of pain over the diverticulum by increase in intra-abdominal pressure either by posture, muscular contraction or direct pressure.

5. Surgery is rarely indicated in the simple diverticula without inflammatory involvement. In acute diverticulitis excision is usually indicated. In cases associated with other pathological changes the other conditions should be taken care of and the diverticulum disposed of in a way depending upon the part the diverticulum is playing in the production of symptoms.

6. It would seem that the careful search for, detection of and surgical attack of certain diverticula of the duodenum would relieve some patients who have been unable to secure relief from upper abdominal symptoms which are not due to any other demonstrable pathological conditions.

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PARATHYROID EXTRACT AND LEAD POISONING

Experiments have been made which indicate that parathyroid extract-Collip mobilizes from the bones a certain amount of stored lead which is readily available. Since the amounts of lead excreted following this treatment were far greater than those obtained in previous investigations, when ammonium chloride or phosphoric acid were given, the method will probably have some therapeutic value in the treatment of lead poisoning. (Jour. A. M. A., Feb. 19, 1927, p. 572.)

RATTLESNAKE POISON

According to Afranio Do Amaral, "A General Consideration of Snake Poisoning," the use of potassium permanganate in the treatment of rattlesnake bite is of little value. Specific treatment with potent antivenin is generally admitted to be efficient, and the only means of neutralizing the poisons and arresting the action of the toxic elements. During the last summer a few tubes of anticrotalic serum prepared in Brazil were used with promising results in Texas. (Jour. A. M. A. Jan. 29, 1927, p. 342.)

ILEOSTOMY IN ACUTE PERITONITIS*

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Summers, reviewing the treatment of acute intestinal obstruction, states that in 1676 Paul Barbette of Amsterdam advised opening the abdomen in obstinate volvulus and intussusception.

A few years later, Nucke, the anatomist, had this operation carried out successfully.

Renault in 1772 performed the double operation of gastrostomy (abdominal section) and enterostomy. Bonney's work has recently called the attention of the surgical world to his advocacy of this procedure and he states that no patient with fecal vomiting should be allowed to die without doing the operation of enterostomy.

Ileostomy or enterostomy is indicated in severe cases of ruptured appendix with spreading peritonitis, in intestinal obstruction, peritonitis due to ruptured viscus or perforated bowel, postoperative ileus, traumatic peritonitis, pneumococcic and streptococcic peritonitis and in certain cases of intestinal anastomosis or resection of the bowel.

It is contra-indicated in the presence of tuberculous peritonitis.

Mechnical obstruction of the bowel, while at first only mechanical, later becomes paralytic from advancing intoxication.

Sepsis is always a serious complication, the mortality being nearly 50 per cent. It is asserted and generally accepted that the cause of death in acute intestinal obstruction or septic peritonitis may be stated as follows:

1. A form of chemical intoxication exists.
2. The toxic chemicals are developed in the process of protein disintegration.
3. The effect of these substances is to cause a fall in the blood pressure, temperature disturbances, vomiting, diarrhea, disturbance of the kidney excretion, high non-protein blood nitrogen, delayed coagulation time of the blood, profound congestion of the duodenal and jejunal mucosa, collapse and death.

For the relief of these, the clinician should feel obliged to promptly release the obstruction, and evacuate the contents of the obstructed bowel. The non-protein nitrogen content of the blood should be used as a pre-operative guide to the degree of intoxication and a post-operative guide to the prognosis.

There should be the use, post-operatively, of all measures that combat severe chemical poisoning, *i.e.*, the induction of fluid into the system, the use of heat, washing out of the stomach and the lower bowel, and enterostomy openings, more than one if necessary.

We think it well to recognize the danger of high enterostomy or jejunostomy, as pointed out by Orr and Haden; also that there are many different problems in intestinal obstruction, some of which yet remain to be solved. Dogs die from an enterostomy done high in the jejunum; however, this does not preclude the advantage of an enterostomy done low in the ileum in clinical cases. Enterostomy should, no doubt, be done as near the point of obstruction as possible, and the technic employed should be that which permits drainage from the bowel, which can readily and easily be checked by clamping the catheter—the Witzel gastrostomy method. Such an enterostomy permits the withdrawal of the catheter in a week or ten days, with little, if any, leakage of intestinal contents.

Severe intra-abdominal conditions should be treated early. Even when some of these patients are seen late, much may be done for their relief by releasing the killing intestinal fluids and toxins from the gut and thereby from the system.

It is well to remember that we should not wait for all the classical symptoms of peritonitis, *i.e.*, fecal vomiting, rapid pulse, high temperature, high leukocyte count, severe pain, distention of the abdomen, Hippocratic facies, etc., but let us rather remember that muscular rigidity is a danger signal and that we should be brave enough to ascertain the cause of this rigidity or muscle spasticity by an early explorative operation.

Muscle rigidity or spasm which develops rapidly, in association with or without pain, usually indicates a more or less serious local intraperitoneal lesion. Delay of a few hours may decide for or against recovery. The early importance of this sign should be accepted for immediate action. Muscular rigidity is the result of severe localized infection or the perforation of a viscus, more often duodenal or gastric.

The leukocytes may be normal, the pain may

*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, Oct. 18, 1926.

be severe or moderate, the predominant feature being muscular rigidity.

Surgical intervention is urgent, a clinical diagnosis should be made, but too much time must not be consumed with laboratory refinements. We all know that in many cases the muscular rigidity may disappear in twelve to twenty-four hours, followed later by a generalized abdominal pain and distention, with uncertain local tenderness over the initial lesion, materially lessening the chances of recovery.

THE PREVENTION OF MEASLES

The need for a specific treatmcnt of measles is evident. However, no effective measures for use after onset of the attack have been thus far developed, although methods of measles prophylaxis have been demonstrated. The efficacy of thc blood serum of convalescent measles cases in preventing the disease has been established. The convalescent serum must be administered subcutaneously or intramuscularly as soon as possible after contact, the degree of protection afforded depending on the promptness with which the serum is given. Some workers advocate the use of the blood of adults or of children who have had the disease some years previously when recent convalescents are not available. The difficulty of securing a constant supply of convalescent measles serum is the chief obstacle to its widc use. Favorable results have been reported from the use of an immune goat serum. If confirmed, this may obviate dependence on a human supply. Good results have also been reportcd with a serum made from blood of sheep inoculated with the Berkefeld filtrate of the nasal secretion and sputum of measles patients. Attempts at active immunization by the use of blood of measles patients at the onset of the eruption have been made. These reports are interesting, but longer observation will be required before their worth can be estimated. In the trcatment of established measles, the great desideratum is an effective method of preventing the dangerous secondary infections. (Jour. A. M. A. April 2, 1927, p. 1081.)

WHAT IS AN ANTISEPTIC

While physicians understand that a germicide may produce effects on an infected area in a brief period which can be produced by an antiseptic only through prolonged contact, the general public understands these terms as synonymous. In consideration of this condition, the U. S. Bureau of Chemistry, which is charged with the enforcement of the Food and Drugs Act, has recently come to the conclusion that the term "antiseptic" when used in the labcling of a medicinal product is objcctionable unless the preparation when used as directed will actually destroy micro-organisms. The medical profession will, of course, agree at once that the position taken by the Bureau of Chemistry is in the public interest. (Jour. A. M. A. April 30, 1927, p. 1420.)

RENÉ THÉOPHILE HYACINTHE LAËNNEC*

Inventor of the Stethoscope.

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August 13, 1926, marked the end of one hundred years since the death of one of the greatest and best beloved of physicians, René Théophile Hyacinthe Laënnec, the inventor of the stethoscope and the great pioneer in the physical diagnosis of the chest; himself, at last, the victim of tuberculosis, to the knowledge of which he made such a supreme contribution. In all medical history there is no more fascinating chapter. Laënnec's name comes down to us in an atmosphere of the affection and admiration in which he was held by his contemporaries and successors; his writings still speak to us of the quality of his mind and his work, accomplished as it was in the face of great handicap and physical suffering to which he finally succumbed.

EARLY LIFE

Laënnec was born at Quimper, in Bretagne, February 17, 1781. His father was a lawyer by profession, who devoted a great deal of his time to literature, particularly to the writing of poetry. Laënnec's mother died when he was but six years old and, because his father seemed unfitted to care for him, he was placed under the care of his father's brother, curé of a parish near Quimper. Here both his education and his health—for he was a delicate child—were well provided for. After some five years, Laënnec went to live with another uncle, a physician and a member of the Faculty of Medicine of the University of Nantes. This move, resulting in the close association with a man in the practice of medicine, proved to be a deciding influence in Laënnec's life. Here Laënnec devoted himself to his studies, and although his education was seriously interrupted during the French Revolution, his good scholarship won for him numerous prizes.

MEDICAL TRAINING

Soon after going to live with Dr. Laënnec, the young René began to devote himself to the

*This manuscript is an elaboration of a biographical sketch of Laennec which appears in a book entitled "Fighters of Fate. A Story of Men and Women Who Have Achieved Greatly Despite the Handicaps of the Great White Plague," published by Williams and Wilkins Company, Baltimore, Md. Presented before the Lymanhurst Medical Staff, November 23, 1926.

study of clinical medicine, together with related problems in anatomy and pathology. His genius for observation and his interest in correlating clinical findings with their underlying anatomy and pathology seem to have been manifested almost from the beginning. These studies are said[1] to have begun as early as 1795 at the Hôtel Dieu at Nantes, when Laënnec was not yet fifteen years old. In 1800, at the age of nineteen years, he went to Paris, then the center of learning in Europe, to complete his medical education.

Rene Theophile Hyacinthe Laennec.
—Courtesy of *Hygeia.*

Believing his training in Latin to be incomplete he devoted himself to that subject, as an accessory study, until he had learned to read and write so fluently that he later delivered some of his medical lectures and dictated his notes on the examination of patients in that language. At the end of scarcely more than a year in Paris, Laënnec received first prizes both in medicine and surgery, at the University of Paris. He became a pupil and admirer of Corvisart, personal physician to Napoleon, and a man of great influence, who appreciated and encouraged his brilliant pupil. Corvisart's sympathy and astuteness are shown both by his attitude toward Laënnec and by his rediscovery of Auenbrugger's work on percussion, which he brought into common use after nearly fifty years of neglect. During the first three years as a pupil at the clinical school of La Charité, under Corvisart, Laënnec drew up a minute record of nearly four hundred cases of disease, which were reported with great talent and discrimination. According to Forbes[2] (his translator and biographer) "these very cases furnished the groundwork of all his future researches and discoveries."

EARLY PUBLICATIONS

As early as 1802, Laënnec, then in his twenty-second year, published several papers in the *Journal de Medecine,* conducted by Corvisart, Leroux and Boyer. The first paper[2] reported a case of heart disease and the second, *Les Histoires d' Inflammation du Peritoine,* consisted of the analysis of a series of cases of peritonitis with a classical description of its character and clinical signs. A third, *On the Tunics which Cover Certain Viscera,* reports the discovery of the fibrous capsule of the liver, spleen and kidney. A description of a method for demonstrating the epithelial lining of the ventricles of the brain and the discovery of the subdeltoid (subacromial) bursa are included in this year's work,[1, 2] a remarkable and precocious record for a medical student not yet twenty-two years of age.

In 1803, while still a student, Laënnec gave a successful and popular course of lectures on pathological anatomy which he continued for three years.

On June 11, 1804, Laënnec obtained his degree of Doctor of Medicine with a thesis entitled *Propositions on the Hippocratic doctrine applied to the practice of medicine,* in which he proved himself "to be no less skilled in the knowledge of the Greek language, than deeply read in the writings of the father of physic."[2]

TEACHER AND CLINICIAN

Immediately on graduation, Laënnec engaged in the practice of medicine, in teaching, investigation and writing, until the pace which he set for himself proved, finally, too great. The years between 1804 and 1816 were marked by many contributions to the literature of anatomy and pathology, of interest, but too diverse to be reviewed at this time. One, which still bears his name, is Laënnec's cirrhosis of the liver. He became famous as a teacher, attracting students and physicians from all parts of the world. He was known as an anatomist, pathologist, and clinician, famous especially for his method of cor-

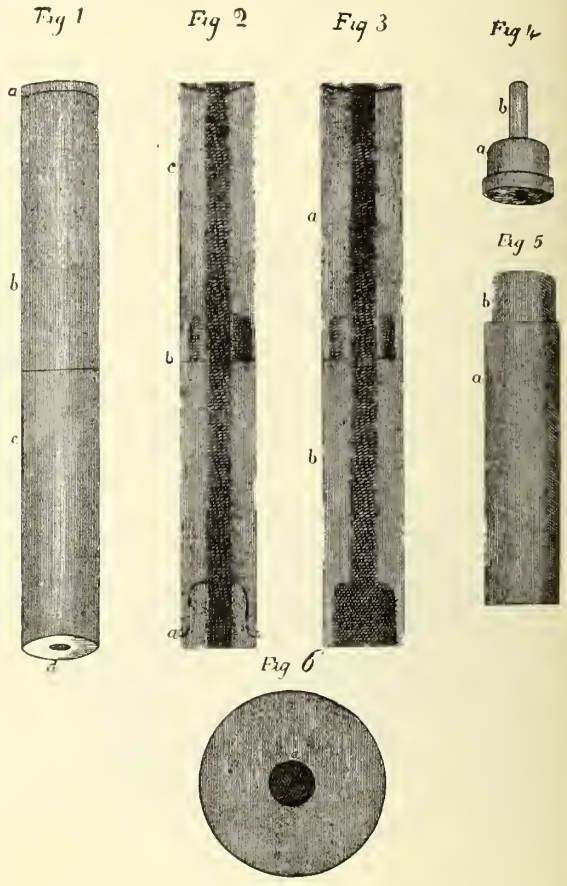
relating clinical and postmortem findings.[3] It was said of him by one of his contemporaries: "Laënnec was almost an ideal teacher. He talked very easily and his lesson was always arranged with logical method, clearness and simplicity. . . . It was as if he were holding a conversation with those who heard him and they were interested every moment of the time he talked, so full were his lectures of practical instruction."[4]

INVENTION OF STETHOSCOPE

In 1816, at the age of thirty-five, Laënnec was appointed visiting physician to the Necker Hospital at Paris and it was here that the invention of the stethoscope occurred. More than a century before, in 1705, an old author (quoted by Walsh[4]) had said: "Who knows but that one may discover the works performed in the several offices and shops of a man's body by the sounds they make and thereby discover what instrument or engine is out of order!" Hippocrates, as Laënnec himself pointed out, had applied his ear to the patient's chest and described "a noise like that of boiling vinegar." Auscultation by the direct application of the ear to the chest (immediate auscultation) had been employed to some extent, especially by Laënnec himself. Auenbrugger's discovery of percussion had recently been rescued from neglect by Corvisart. Palpation had been employed in a very limited way. Laënnec gathered up these loose threads, and, with the aid of the stethoscope, conducted some of the most brilliant and permanent researches in physical diagnosis in the history of medicine. Laënnec's own account of the discovery of the stethoscope is so interesting that, as Walsh[4] says, his biographers are unable to resist the temptation to quote it:

"In 1816, I was consulted by a young woman who was laboring under the general symptoms of a diseased heart. In her case percussion and the application of the hand were of little service because of a considerable degree of stoutness. The other method, that namely of listening to the sounds within the chest by the direct application of the ear to the chest wall, being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well known fact in acoustics and fancied it might be turned to some use on the present occasion. The fact I allude to is the great distinctness with which we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other.

"Immediately, on the occurrence of this idea, I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the



Wood cut of the stethoscope made according to Laennec's specifications reproduced from the third edition of Forbes' translation of the "Treatise on the Diseases of the Chest." The stethoscope is shown in two sections for convenience in carrying, with a plug (Fig. 4), which was removed for auscultation of the heart.

heart and the other to my ear. I was not a little surprised and pleased to find that I could hereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear.

"From this moment I imagined that the circumstance might furnish means for enabling us to ascertain the character not only of the action of the heart, but of every species of sound produced by the motion of all the thoracic viscera, and consequently for the exploration of the respiration, the voice, the *rales* and perhaps even the fluctuation of fluid effused in the pleura or pericardium. With this conviction I forthwith

commenced at the Necker Hospital a series of observations from which I have been able to deduce a set of new signs of the diseases of the chest. These are for the most part certain, simple, and prominent, and calculated, perhaps, to render the diagnosis of the diseases of the lungs, heart and pleura as decided and circumstantial as the indications furnished to the surgeons by the finger, or sound, in the complaints wherein these are of use. . . .

"The first instrument which I used was a cylinder of paper, formed of three quires, compactly rolled together, and kept in shape by paste. The longitudinal aperture which is always left in the center of paper thus rolled, led accidentally in my hands to an important discovery. This aperture is essential to the exploration of the voice. A cylinder without any aperture is best for the exploration of the heart."

Laënnec experimented with several kinds of material—glass, metals, paper, wood, Indian cane, and a cylinder of gold beater's skin.

"Bodies of moderate density, such as paper, the lighter kinds of wood or Indian cane, are those which I have always found preferable to others. This result is perhaps in opposition to an axiom in physics; it has, nevertheless, appeared to me one which is invariable. In consequence of these various experiments, I now employ a cylinder of wood, an inch and a half in diameter, and a foot long, perforated longitudinally by a bore three lines wide, and hollowed out into a funnel-shape, to the depth of an inch and a half at one of its extremities . . . When applied to the exploration of the heart and the voice, it is converted into a simple tube, with thick sides, by inserting into its excavated extremity a stopper or plug traversed by a small aperture, and accurately adjusted to the excavation. This instrument I have denominated the stethoscope (from the Greek στῆθος, breast, the σκοπειν, explore).[3, 5]

The stethoscope which Laënnec thus invented and described was simple in design. With slight modification, however, his uniaural stethoscope remains in use today, and is preferred on the continent of Europe to the binaural modification used in America.

RESEARCHES WITH THE STETHOSCOPE

However important and convenient the stethoscope itself, the really important part of Laënnec's work, as Walsh says, was the exact observation and description of sounds heard in the chest, both in health and disease. At the time Laënnec entered upon this phase of his work, the diagnosis and description of pathological conditions of the heart and lungs was in a chaotic state. "Lung fever" was a common diagnosis; indeed, without the means of making a differential diagnosis, a variety of abnormal conditions of the lungs, accompanied by fever, were designated "lung fever." Immediately on reporting the discovery of his stethoscope Laënnec began the auscultation of the chest under normal and pathological conditions, communicating the results of his research to various societies. In June, 1818, at the end of less than two years, he read a preliminary communication before the Academy of Sciences; and in September of the same year, the first edition of his famous work appeared, entitled *Mediate Auscultation or a Treatise on the Diagnosis of the Lungs and Heart, based principally on a new means of exploration.* The title page is dated 1819,[3] although the edition was off the press during the latter part of 1818, which leads to some apparent confusion regarding the year of publication. Althought this work was received by some members of the profession with distrust or ridicule, it caused almost immediately a great sensation in Paris and translations were soon made into other languages.

LATER LIFE

The labor of preparing this treatise was very nearly fatal to the author's never robust health. He retired to a country house of his own at the seaside to rest and recuperate, spending much of his time in the open air. After two years of retirement, Laënnec returned to Paris, November 15, 1821, knowing that his health would not permit his return to active life, but believing that he might be of use to mankind, by extending the knowledge of auscultation.[2] He resumed his duties in Necker Hospital and in 1822 was appointed to the Chair of Medicine in the College of France.

In the meantime, the first edition of *The Treatise on Mediate Auscultation* had been exhausted and was out of print. With the utmost care, Laënnec set about the preparation of a new edition which was, in fact, a new work rearranged according to a new plan. All the facts

were submitted to reëxamination, errors were corrected and new material on treatment was added to the previous account of anatomy and diagnosis. This edition was completed during the last illness of its author and the labor it involved hastened his death even as Laënnec seems to have realized it would do before he left his sea-side retreat in 1821. The second edition appeared early in 1826 and Laënnec died in August of that year. Forbes[2] says: "He had long been subject to a dry cough, to transient pains in his right side and to diarrhea, which, when it kept within moderate bounds, he considered rather beneficial than otherwise. In the beginning of April (1826) these symptoms became aggravated, with addition of fever and dyspnea and considerable emaciation. Blood letting and other appropriate measures were had recourse to." Laënnec returned to his country house by the sea, but his condition grew steadily worse and he died on August 13, 1826, at the early age of forty-five years. Thus the man who made so great a contribution to the early recognition of tuberculosis, fell upon his own battlefield a victim of pulmonary tuberculosis with tuberculous pleurisy and probably tuberculous enteritis. Strangely enough, no autopsy was performed. "This," says Forbes, "appears a rather singular omission, considering the eminence and character of the man. . . . I am informed by his cousin that the examination did not take place because there was no medical person near him at the time of his decease."

Thus, Laënnec's life illustrates the common history of those who suffer with tuberculosis. He is described as never having been in robust health, even in childhood. Exhausting labor was followed by active disease. Rest and the life at his country home by the sea enabled the sufferer to recover a degree of health, but not sufficient to withstand the demands of a return to active life. Finally, in his desire to complete his work, Laënnec became a martyr to his great discovery.

CHARACTER AND PERSONALITY

Many tributes are at hand to attest the beauty, self-sacrifice and simplicity of Laënnec's life. "He was a sincere Christian and a good Catholic, adhering to his religion and his church through good report and bad report," says Forbes.[2]

"His death," says Bayle,[2] "was that of a Christian. . . . His religious principles, imbibed with his earliest knowledge, were strengthened by the conviction of his maturer reason. He took no pains to conceal them when they were disadvantageous to his wordly interests; and he made no boast of them, when their avowal might have been a title to favor and advancement. . . . His great reputation caused his services to be required by persons of the highest station, as well as by the poor: the former he frequently refused to visit, on account of the bad state of his health, the latter never." The following quotation from Forbes[2] helps to complete the picture of his simplicity and true greatness. "M. Laënnec was mild and agreeable in his manners, and of a quiet and even temper. His conversation was at once lively and instructive; and his natural humility and kindness of heart were in no degree lessened by his great reputation. . . ."

Within twenty-years after his death, Austin Flint, in America, recognized him as one of the five or six greatest physicians of all time.

CONTRIBUTION TO MEDICAL SCIENCE

Although Laennec's death occurred one hundred years ago, his medical writings, especially *The Treatise on Mediate Auscultation*, continue in remarkable force, the descriptions and terminology, like the stethoscope with which the researches were made, being very little altered by the passage of time. Sir William Osler[6] says: "With the *Traite d'Auscultation Mediate* (1819) Laënnec laid the foundation not only of our modern knowledge of tuberculosis, but of modern clinical medicine. This work (easily to be had in English translation) should be read from cover to cover by every young doctor, and, when possible, by every senior student." In another connection the same author,[7] reviewing medical progress of the late eighteenth and early nineteenth centuries, says: "The clinical recognition of individual diseases had made really very little progress; with the stethoscope begins the day of physical diagnosis. The clinical pathology of the heart, lungs and abdomen was revolutionized. Laënnec's book is in the category of the eight or ten greatest contributions to the science of medicine."

The following quotation, by way of contrast, embodies Laënnec's modest hope for the influence of his work. "It suffices for me if I can only feel sure that this method will commend

itself to a few worthy and learned men who will make it of use to many patients. I shall consider it ample, yea, more than sufficient reward for my labor, if it should prove the means by which a single human being is snatched from untimely death." Again he says, "It would, no doubt, be expecting too much of physicians actively engaged in private practice to devote much time to the acquisition of this knowledge in a hospital; but . . . in this way, there is no physician who may not, in a very little time, learn to recognize with certainty . . . peripneumony, pleurisy, latent catarrhs, and even the very rudiments of these affections; and this last-mentioned circumstance is unquestionably the chief practical benefit of auscultation, inasmuch as these diseases are the more easily cured, according as they are subjected to early treatment."

Laënnec's *Treatise* is divided into three parts: (1) a section on diagnosis, describing the new method of mediate auscultation, with the stethoscope, and the character and interpretation of the sounds to be heard by this means of exploration; (2) a section on the diseases of the lungs, including the researches of the author; and (3) a section on the diseases of the heart and circulatory system.

Laënnec gives credit to Auenbrugger for the discovery of percussion and notes that Hippocrates applied the ear to the chest and heard "a noise like that of boiling vinegar." The technic of the use of the stethoscope is described in the following words: "Although it is not necessary that the chest should be uncovered . . . still it is better that the clothing should be only light; for example, a flannel waistcoat and shirt. . . . The examiner ought to be careful, above all things, not to place himself in an uncomfortable posture, nor yet to stoop too much, nor turn his head backwards by a forced extension of the neck." The author believes that researches in the new art of auscultation should be verified occasionally by examination after death, "in order that we may acquire confidence in the instrument and in our own observation, and that we may be convinced, by ocular demonstration, of the correctness of the indications obtained. It will be sufficient, however, to study any one disease in two or three subjects to enable us to recognize it with certainty." . . .

One hundred years (and more) after these words were written it is difficult for us to believe that Laënnec should have been content to examine a patient through clothing and that he should have been satisfied to recommend so small a range of clinical experience.

Laënnec describes, in turn, the auscultation of respiratory sounds, of the spoken voice, of cough, of *rales*, and of the metallic tinkling. He uses the term *pulmonary respiration* to designate the breath sounds heard over the vesicular portions of the lung. The translator (Forbes) thinks this too indefinite and substitutes the expression *vesicular respiration,* whence we obtain the term in common use at the present time. "Some few individuals," says Laënnec, . . . "preserve through life a state of respiration resembling that of children, and which I shall, therefore, denominate *puerile,* in whatever age it may be perceptible." Laënnec describes *bronchial respiration.* "By this term I designate the sound of respiration observed in the larynx, trachea, and larger bronchial trunks." *Cavernous respiration* is defined as "the sound produced by inspiration and expiration in an excavation formed in the substance of the lungs, whether arising from the softening of a tubercle, from gangrene, from abscess or from extensive dilation of the bronchi.

Laënnec discovered, "in the case of a woman affected with a slight bilious fever and a recent cough," that the spoken voice heard over an area about an inch square below the right clavicle, "seemed to come directly from the chest, and to reach the ear through the central canal of the instrument." This sign, he says, "I have denominated *pectriloquy.*" It is produced, he says, "(1) by softening of tubercles . . .; (2) by the decomposition of gangrenous eschar; (3) by an abscess . . .; and (4) by the evacuation of a cyst into the bronchi." *Aegophany* is described as "a peculiar sound of the voice which accompanies or follows the articulation of words" having the character of "a trembling or bleating sound like the voice of a goat," from which the author derives the term. The French word, *rale* (rattle), as originally used by Laënnec, is rendered in the English translation by the Greek word *rhoncus* (snoring). This substitution, however, did not find favor with English speaking physicians who

continue, more commonly, to adopt Laënnec's word, *rale,* without attempting to translate it. The author classifies *rales* as: "(1) the moist crepitous *rale*; (2) the mucous *rale,* or *gurgling*; (3) the dry sonorous *rale,* or *snoring*; (4) the dry sibilous *rale,* or *whistling*; (5) the dry crepitous *rale,* with large bubbles, or *crackling,* after which he discusses the character and significance of these sounds. The *metallic tinkling,* he says, traverses the tube and "always originates in a morbid excavation within the chest, containing partly air and partly liquid."

These quotations illustrate the terms invented by Laënnec to designate his findings and will serve to show their adoption for permanent use in medical literature, as defined by the author. Auscultation and its terminology comes to us in a high state of perfection and completeness from the original investigator. It has been so satisfactory in the form in which he left it, that it has stood the test of a hundred years of use, without the necessity for radical change.

Laënnec,[5] as has been seen, believed that tuberculosis was curable and he laid special emphasis on the value of the stethoscope because "these diseases are the more easily cured according as they are subjected to early treatment." On the debated question of hemoptysis Laënnec took issue with his contemporaries by stating that hemotypsis is the result and not the cause of tuberculosis. The gross appearance of tubercles and the history of their progress from the miliary lesion to cavitation is described accurately, and completely. The tendency for pulmonary tuberculosis to appear in the upper lobes, most frequently the upper right lobe, was recognized by Laënnec and the frequency of intestinal complications, from which he himself probably suffered. Not the least evidence of his astuteness is shown in his attitude toward treatment. Nature, he thinks, has power to cure in some cases; but the multiplicity of treatments recommended to physicians was an argument to him that no good form of treatment had been found. However, he was opposed to many empirical treatments such as mercurial salivation, red cabbage, frogs, vipers, chocolate, opium, cinchona, etc. Change of residence and a milk diet he advised and the air of the country he considered more wholesome than that of the city. Copious or frequent bleedings, as a therapeutic measure, he thought accelerated rather than retarded the progress of the disease.

Thus Laënnec appears to us, at the end of a century since his death, as a man of clear vision, able to separate true causal relations from accidental coincidence in spite of the traditions of his time, basing his views on exploration and observation and bringing the physical diagnosis of the chest by palpation, percussion and auscultation very nearly to its present form. Whether consciously or no, we pay tribute to his genius whenever physical signs in the chest are discussed, for the terminology and definitions as well as the stethoscope we use are the invention of this great pioneer investigator, and many of our ideas of sound treatment were selected by him from among the mass of empirical nonsense which were current in his time.

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THE CARE OF HEMORRHOID PATIENTS*

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The idea that an operation for hemorrhoids must of necessity be a somewhat embarrassing and decidedly painful proceeding is prevalent in the minds of most laymen and not a few doctors. I believe the reasons for its bad reputation can be found in the willingness to accept any operation on the anus as a procedure of such minor importance as not to warrant the study and consequent improvement in technic that is accorded other surgical measures. Operations for hemorrhoids require only a little thought, some common sense, and adherence to fundamental surgical principles, to render them comparatively painless.

There are certain methods followed in the preoperative, operative, and post-operative treatment of hemorrhoids which are apparently done for no better reason than that they have always been done. In tabulating the points which in my own experience have aided in making the operation, if not enjoyable, at least endurable, I have included only the things which appear to me to have a rational basis and which have been proven to me to be worthwhile, at the same time excluding fetishes which have come down with time, and with no other excuse for their existence.

The administration of a laxative prior to an operation has long been an accepted rule. In the case of the operation under discussion all this can possibly accomplish is the rendering extremely active of an area which we wish to be at rest, the possibility of soiling the entire field of operation with a liquid stool, containing a suspension of bacteria from the entire intestinal tract, and an increase in the patient's post-operative discomfort. If a laxative is given at all it should be given not later than three days prior to the scheduled time, thus allowing the bowel to completely quiet down.

Some workers omit both laxatives and enemas, arguing that it is futile to attempt the cleansing of the last few inches of an extremely infectious tube. This reasoning is correct, yet I feel that an enema given the night before operation, while it is by no means an attempt at antisepsis, removes fecal masses from the lower bowel, places the first bowel movement a little further in the future, and when given the night before, does not endanger the operator with a partially retained enema at the time of doing his work.

The day preceding the operation a light diet, preferably liquids, is taken, and the patient enters the hospital the night before. An enema is given, a sedative to insure a fair night's sleep, and no preparation of the operative field is done. The shaving of the peri-anal area may be omitted or not, as the operator desires, but I have found that neglecting to do so interferes in no way with the work, does away with razor scratches in an area that is at best difficult to shave, and eliminates the risk of the intense irritation which some patients experience when the short hair grows.

No breakfast is given in the morning, and a half an hour before the scheduled time a quarter grain of morphine may be given without atropin. The latter causes an uncomfortable dryness in the throat of a patient who is wide-awake, and in the presence of a local anesthetic is not particularly essential. As a matter of fact I am at present giving no preliminary sedative at all, since with sacral anesthesia there is no pain, and it is a rather common experience to have a patient brought to the operating table pale and nauseated as a result of the morphine.

The question of the position on the table I consider as being rather important from the standpoint of the patient. The lithotomy position I have discarded in local anesthesia. It is a position in which it is impossible to be physically comfortable, and certainly no one in his wildest flights of fancy could call it dignified. The Sims position is comfortable for the patient and convenient for the operator. The prone position, with the arms on rests, head on a pillow, and a pillow under the hips to raise them slightly, is very satisfactory, gives the assistant a better opportunity to see and assist, and the patient does not leave the operating room with a cramped back and legs.

As to skin preparation, both around the anus, in the canal, and high up over the sacral region where the needle is inserted, iodin or acetone-

*Presented before the Ramsey County Medical Society, February 28, 1927.

mercurochrome may be used. I believe the latest work proves beyond a doubt that acriflavine is the best skin antiseptic.

I believe there is much to be said in favor of a local anesthetic, although both in this country and abroad, proctologists of note are using general anesthesia, for a part at least of their work. Where there is no contraindication, I feel that it is by far the anesthetic of choice. Aside from the usual more or less unpleasant after-effects of a general anesthetic, there is not the sphincteric relaxation with ether or gas that one obtains with novocain. In general anesthesia the sphincter is divulsed, in local anesthesia it is relaxed, and there is a marked difference in the degree of post-operative pain, depending on which procedure has been followed.

It is impossible to forcibly divulse a sphincter without tearing some of its fibers, with the production of ecchymosis and subsequent pain. Divulsion of the sphincter is never necessary.

Sacral anesthesia is to be preferred to local infiltration in that the operation, unless the anesthetic fails completely, is absolutely painless. The sphincter being quite relaxed requires no divulsion and there is no distortion whatever in the anal canal, due to distension with the anesthetic solution.

This is done by the introduction into the sacral canal, through the sacral hiatus, of from one to three ounces of 1, 2, or 3 per cent novocain. I have been using 40 c.c. of 2 per cent novocain with adrenalin, slightly warmed and injected slowly. In a series of forty cases the average time of obtaining complete relaxation of the sphincter and surgical anesthesia was about eleven minutes, so that the objection that the method takes too much time does not hold good. The anesthesia is perfect and lasts upwards of forty-five minutes.

As to the type of operation, again individual opinion must be taken into consideration. I do not believe that the question of the type of operation is as important as the manner in which the patient is prepared, the attention to surgical principles at the operation, and, most important, the post-operative care that is administered. That the best operation in the world may be very poorly done, and the poorest give an excellent result if proper after-care is given, is certainly true of hemorrhoidectomy.

The clamp and cautery is in high favor some places; in others not. Syms in a recent article in Surgery, Gynecology and Obstetrics, reviews his experiences in this type of operation in 600 consecutive cases. His opinion is that this method is safer, less painful, and the time of convalescence materially shortened. Graeme Anderson, at St. Mark's in London, a hospital devoted exclusively to the treatment of rectal conditions, made a study of their experience with the same type of operation. He grouped the patients into three classes with regard to the post-operative pain. In the first class were those requiring more than a quarter of a grain of morphine. In the second class those who were adequately controlled with a quarter. In the third class he placed those who required little, if any, analgesic. In the clamp and cautery cases the pain was severe or moderate. The severe cases made up 70 per cent and the moderate 30 per cent. The patients operated upon at the same institution by the ligature method had severe pain in only 30 per cent. Gant says the clamp and cautery is a scientific operation in which only diseased tissue is removed—Hirschman condemns it unqualifiedly. Mummery says after this operation the complications are more frequent and more severe than after the ligature method. My experience with the clamp and cautery has been very limited, but I never felt that it had any particular advantages over excision.

In the operation which we have been using—that of ligature and excision—certain principles should be observed to assure the best results with minimum pain and complications:

1. Relaxation instead of divulsion.
2. Conservation of mucosa.
3. No tissue to be clamped which is not later removed.
4. Minimum amount of suturing.
5. No sutures in skin.
6. Careful handling of tissues.

Complete relaxation of the sphincter such as is obtained with sacral anesthesia gives a maximum of room, and perfect exposure, with the piles out where they are in plain view, on what is almost a plane surface. With a properly relaxed muscle there are no torn sphincter fibers, no submucous and intermuscular hemorrhage to cause pain after the effect of the novocain has left and

finally result in small areas of fibrosis after they have healed.

In exposing the field no retractors are used. Instead, four Pennington clamps are applied to the four sides of the anus inside the muco-cutaneous borders and traction made on these. These are applied very carefully, grasping in the bite only such tissue as will be removed later during the operation. Traumatizing tissue about the anus with clamps and then allowing it to remain certainly is at least one cause for the troublesome swollen tags that so often persist after a hemorrhoidectomy.

After a proper exposure the pile selected for removal is grasped in a clamp and a ligature applied with a ligature carrier or heavy curved needle, through the mucosa at its base, around the entering vessel, and tied tightly. This effectually controls the blood supply to the pile and is the only ligature or suture absolutely necessary. The pile is now dissected out, removed and the wound in the mucous membrane partially closed with one or two stitches. Tight suturing of this wound makes for pain and also for the retention of highly infected wound juices which are fairly certain to cause trouble later. No sutures whatever are used in the skin, since these are not only unnecessary, but exceedingly painful.

The mucosa should be conserved as much as possible, as too free removal leads to such unpleasant sequelæ as stricture, ectropion, etc.

The operation having been completed entirely in plain sight, there is no question as to post-operative bleeding, so the now-obsolete rectal plug is dispensed with. Vaseline or butesin picrate ointment is applied to the wound, or it may be left dry, and a dressing is applied with two adhesive straps.

Patients are routinely given a hypo of a sixth of a grain of morphine when they are returned to the room, and frequently this is the only morphine they need. A hot water bag is applied to the anus, and the patient is put in the so-called pelvis high position of Montague. In this position the head pillow is removed, a hard pillow is inserted under the hips, and one is inserted under the partially flexed knees. Thus the rectal area is no longer in a position where it is congested by gravity, nor can the pelvic viscera exert pressure on the anus and rectum. It is surprising the comfort that comes from this simple procedure.

The diet the first day is liquid or soft as the patient wishes, and liquid petrolatum, a tablespoonful in the morning and in the afternoon, are started the same day. The second day soft diet may be given and the third day light. Each morning the dressing is removed, the external wound cleansed and swabbed with an antiseptic solution of some sort, and a cotton applicator with a bit of vaseline is gently passed through the sphincter.

One of the most gratifying procedures in the post-operative care of hemorrhoid patients is the Sitz bath. This may be started as early as the third day, and can be given for ten to fifteen minutes twice a day at a temperature of 110 degrees. The heat relaxes the spastic sphincter, promotes peripheral dilatation and thus reduces pelvic congestion. I believe my patients derive more comfort from the use of the Sitz bath than from any other one thing. After the bowels begin moving it should be used after each movement.

On the fourth day I insert the finger very carefully, and very well lubricated. This separates many small adhesions and prepares the way for the first bowel movement. The night of the fourth day, if the bowels have not moved (there has been nothing given to tie them up) a mild cathartic is given such as compound licorice, and the next morning six ounces of warm olive oil through a soft rubber catheter.

Usually by the sixth or seventh day the patient is ready to go home.

The patient is seen at the office every other day, the wound cleansed, inspected, and digital examination made. In this way the progress of shrinking of any small tags can be watched, and tendency to infection, stricture or fistula formation guarded against.

If any external tags remain after the third week, they are removed in the office, since after this length of time no appreciable shrinkage takes place.

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EDITORIAL

The State Meeting

The date of our annual State Medical meeting is approaching. Although the event takes place each year, this meeting has been, and in all probability will always be, the big medical event of the year. No other medical meeting in the state touches in such a comprehensive way the various scientific, economic, legal and public health activities of medical practice.

The character of the annual meeting changes from time to time. Effort is always made to take up in the scientific program the newer developments in medical progress and a glance at the program which appears in this issue will show that this year's program is no exception in this regard. Clinics and symposia will be featured again this year.

More than the usual number of visitors will take part in the program. Personally, we feel that this importation of talent has a very favorable tonic effect on our state meetings. Among the visitors appear the names of Dr. T. A. Abt, Dr. H. E. Mock and Dr. John Coulter of Chicago, Dr. P. M. Hickey of Ann Arbor, Dr. R. H. Major of Kansas City and Dr. J. O. Polak of Brooklyn. In the Medical Economics meeting we will hear first hand from Dr. M. L. Harris, chairman of the Judicial Committee of the American Medical Association, this authority's views on contract practice. Miss B. C. Keller, director of the Lay Educational Committee of the Illinois State Medical Society, will hold forth on the Illinois Lay Education Program.

The hospitality of the members of the profession in Duluth has proven itself on numerous occasions. The climate of Minnesota's port is sure to be bracing. Coming, as our meeting does, just prior to the Fourth of July, makes the combination of an outing with a duty irresistible. What more can you ask? Bring your wife or sweetheart or both and make it "two to Duluth."

Cancer of the Oral Cavity

Carcinoma arising from the mucous membrane of the tongue, lip, floor of the mouth, cheek, gum, hard and soft palate, offers the best evidence in favor of a number of statements which can be made in regard to cancer.

First.—Cancer does not begin in a healthy spot. It begins in an area of mucous membrane changed from normal by some form of irritation.

Second.—Even when the epithelial cells in the area that is not cancer have become morphologically and physiologically, and perhaps biochemically, malignant, cancer is still a local disease.

Third.—There is no better evidence than in the mouth for the now accepted view that at least some forms of cancer are due to chronic irritation. In the mouth the factors are ragged dirty teeth and tobacco or snuff in any form. Cancer is rarely produced by one of these factors—ragged, dirty teeth or tobacco. The tobacco seems to be the dominant factor.

Fourth.—Protection from cancer of the mouth rests upon well established rules of health. The care of the expectant mother and proper feeding, cod liver oil, which starts the child with proper teeth rudiments, the care and the feeding of the

child, the periodic examination during childhood, adolescence and adult life. This will absolutely eliminate the factor of dirty, ragged teeth.

Fifth.—The elimination of tobacco as one of the causes of cancer of the mouth rests upon the newer studies in psychology which have led to practical results in the mental hygiene and mental care of children. This has for its object not only teaching them rules of conduct and the formation of food habits, but gives them the character and mental control which increases the possibility of their continuing throughout adult life not only with a knowledge of the rules, but the mental control which will lead to a determination not only to follow the rule, but to enjoy this line of conduct.

There is no evidence that with clean smooth teeth, tobacco should not be used in moderation, providing the individual knows that tobacco must cease in all forms the moment any spot of mucous membrane in the mouth shows a reaction in the appearance of a white spot (leukoplakia) or area of irritation.

Many individuals with clean teeth never show any dangerous reaction in the mucous membrane. A few individuals with clean and smooth teeth do show this reaction, that is, they become sensitized to tobacco. This group, when so sensitized, must stop the use of tobacco. The factor in tobacco causing irritation of the mucous membrane has not been demonstrated. We have no evidence that it is nicotine, or the heat, or oil; it may be one or more, all, or some factor yet undiscovered.

Sixth.—Cancer of the mouth, therefore, is a preventable disease, and it rests upon teaching children and adults the rules of health and rules of conduct, and influencing the people to understand and take advantage of periodic examinations by the medical and dental professions.

Seventh.—In the non-cancerous stage of the local disease, removal of the causes—tobacco and teeth—may be followed by healing. If not, the local area must be removed, best, with the cautery and with a margin of healthy tissue sufficient should the miscroscope reveal beginning cancer.

Eight.—In fully developed cancer, even in the earlier stages, the chances of a permanent cure after radical local resection, are not more than 70 per cent. This is due to the fact that the morphologically and physiologically malignant cells have migrated beyond the local area. The complete operation of the local area with the neighboring lymphatic glands and even the resection of the lower jaw does not offer as much as a 10 per cent chance of a permanent cure.

Ninth.—I am unable to get the evidence that radiation with *x*-rays and radium has increased the number of permanent cures. It has certainly been harmful, when employed in place of local resection in the earlier stages. There is no doubt that in the later stages it has prolonged life with less mutilation than the complete extensive operation.

Tenth.—Therefore, the cure of cancer today rests chiefly on the education of the people.

Joseph Colt Bloodgood, M.D.

Better Hospitals

The standing of a hospital in its community depends more on the medical staff than on any other component unit. If individual members of the staff are slipshod in their methods the reputation of the institution suffers.

While the Board of Trustees has ultimate responsibility to the public for all the phases of a hospital's activities, its main duty is concerned with the financial affairs of the institution. Restrictions of staff membership are usually left, and rightly so, to the staff or its executive committee; for medical men are best able to judge medical qualifications of fellow practitioners. No one conversant with the present status of medical practice would for a moment question the advisability and necessity of staff restriction.

Hospital efficiency has greatly improved in recent years and yet there is still, and always will be, the need for constant effort on the part of hospital management to improve the service rendered. The hospital committee of the A. M. A. (now the Council on Medical Education and Hospitals) and the American College of Surgeons have both helped to bring about an improvement of hospital service through classification and definition of requirements of first class institutions.

Inasmuch as the interne year is required for a medical diploma, hospitals have acquired a more distinctly educational character. Instead

of the catch-as-catch-can methods of acquiring clinical experience formerly in vogue, some systematic supervision of interne work becomes essential. The medical schools are coming to demand supervision of their undergraduates acting as internes by a committee of the staff. Whereas in former years emphasis was laid on the duties of the internes to the hospital, the responsibility of the hospital staff to the internes now is being stressed.

In the Hospital Number of the Journal of the American Medical Association (March 12, 1927) may be found much valuable information regarding the work of the Council on Medical Education and Hospitals of the A. M. A. The following requirements stipulated by the Council before a hospital is listed among those recommended for internship may be mentioned:

1. Only general hospitals are eligible where a variety of medical, surgical, obstetrical and pediatric cases are treated.

2. The staff must be proficient in general practice or the specialties and must be willing to provide instruction to the internes.

3. The hospital must have a competent pathologist and radiologist who in addition to routine duties can render instruction to the internes.

4. A new stipulation provides that necropsies must be obtained in 10 per cent of hospital deaths in the year 1928 and 15 per cent after Jan. 1, 1929.

5. Internes must have opportunities for instruction in the giving of general and local anesthesia, in laboratory technic on patients on their services, in the performance of necropsies under supervision.

6. Hospital records shall include history, physical and laboratory examinations, pre-operative and post-operative diagnoses and the much neglected progress notes; and the records shall be in charge of a trained secretary.

7. Provision should be made for a hospital library for interne use containing at least ten medical journals.

8. Internes shall be recruited from Class A or B medical schools.

9. Provision should be made for physical recreation and working hours limited to eight or at most ten hours a day for the period of twelve months.

10. There shall be a printed set of rules governing the internes.

In short the training afforded shall be the best obtainable in preparation for general practice.

The American College of Surgeons has exerted a most beneficial influence on hospital efficiency by its hospital classification. Certain minimal requirements are stipulated which include staff organization and rules, monthly staff meetings for the review of clinical cases in the hospital, well kept case records, x-ray and laboratory facilities.

The college evidently believes that the best index to the character of the work of any hospital is the case record. This in fact is the permanent record of all findings which lead up to a correct diagnosis, which details the type and method of treatment with the final results. No one but the attending physician can be held responsible for the hospital record of his patient.

In our May number we published a short article by a member of the legal profession entitled "The Physician's Liability Insurance Policy," which pointed out very clearly the importance of case records from a legal standpoint. Embarrassing situations only too often arise when case records are only half kept and too much reliance is placed on memory.

It should only be necessary to call attention to what constitutes a first class hospital and the reasons for complete case records for staff members to see and then do their part.

MISCELLANEOUS

THE BASIC SCIENCE BILL

The following article by Dr. J. W. Andrews published in the Mankato Daily Free Press April 18, 1927, is herewith reproduced inasmuch as it voices so well the medical viewpoint on the Basic Medical Practice law.

Mankato, Minn., April 16, 1927: To The Free Press: Will you be kind enough to give space in your paper for reply to a communication which appeared in a recent issue of The Free Press, and also one in a recent issue of The Minneapolis Journal? In the latter was incorporated a statement from the editor of The Free Press. These letters were signed by W. C. Sutherland, D. O. The subject of these communications was the Basic Science Bill—now a law of the state of Minnesota.

I find that many of our people do not understand the provision of the Basic Medical act, and a few

words in explanation will not be out of place. The law provides that all persons undertaking to cure human ills shall first be a high school graduate, and second, pass a satisfactory examination before a competent board on the basic medical branches, viz.: Anatomy, physiology, bacteriology, pathology, hygiene, and chemistry—six in all.

This is no class legislation: it applies to all alike. It is not a bill which favors the medical trust—if any exists. Is it a law which favors the cults of healing? No, it applies to all alike. Is it a fair law? Why not? It provides that the man or woman who treats your child or any member of your family in case of sickness shall possess knowledge of those basic branches of medical science which treat of the structure and functions of the human body, and the scientific application of means for a cure. Do you object to a fair proposition of this kind?

Were the Omaha railroad to call me down to the depot to take charge of an engine carrying a passenger train to St. Paul with its precious human freight the court would adjudge it a crime, and it would be a crime. Yet it is just as surely a crime to call some one to the bedside of a sick child or a wife, who has no knowledge of the basic medical sciences. The crime differs only in degree, for in the former case there are more human lives at stake.

Let me say right here that I have no quarrel with osteopath or chiropractor; they are my neighbors and my friends, some of whom I associate with every day. They are good American citizens and as such are entitled to our respect. It is by no means these men that I am attacking, but it is their system of practice which has to do with the public and is therefore a public question, and Doctor Sutherland so regards it. In at least ninety per cent of their cases the cause of the disease is a dislocation of some of the vertebræ of the spinal column. This is the cause of the disease whether it be pleurisy with purulent effusion, valvular disease of the heart, or an ulcer of the stomach, and the cure is always to adjust the supposed dislocated spine and relieve the pressure that this dislocation is exerting upon some of the nerves branching out from the spinal cord. How absurd! If these gentlemen have any knowledge of human anatomy, human physiology and pathology, they would know that the dislocation of even a single vertebra would result in paralysis and most likely death to the patient.

Dislocation of any part of the spine is a most serious condition, hard to produce, and rarely exists. "But," says the chiropractor, "we study anatomy." When Doctor Palmer, the founder of the chiropractic school and the late president of that school, was before the senate committee in our legislature, the writer asked him if his pupils study human anatomy. His answer was they did. "But," said he, "they study it from the outside; they never dissect the body." This is the testimony of him who was leader in the chiropractic profession. How much can a mechanic know about an automobile, about its engine, ignition apparatus, etc., by looking at the outside and studying the mud guards and running board?

Dr. Sutherland's first objection was that if the bill passed it would put him and his associates out of business. Has Dr. Sutherland studied the constitution of the United States? Does he not know that an ex-post-facto law cannot be enacted? That would be unconstitutional. This Basic Science bill cannot be and is not retroactive. Dr. Sutherland can continue with his practice in the future as in the past, and so can all his associates.

His second objection is that his school is not represented on the examining board. This objection is overcome by an amendment placing one osteopath and one chiropractor on a board of five, an amendment as acceptable to the regular medical profession as it is to the osteopath and chiropractor. The regular profession will only insist that these members of the board are qualified under the Basic Science bill, for example, anatomy, physiology, bacteriology, pathology, and chemistry—knowledge which they cannot attain by studying the outside of the body.

Dr. Sutherland says osteopathy is not waning. I am not prepared to say whether this is true or not. I accept his statement, but one thing I do know, that unless these schools of practice qualify themselves in the basic principles in the practice of medicine, their profession will wane.

Dr. Sutherland further says that osteopathy recognizes the remedies within the body, referring, I assume, to the secretions of the ductless glands. The regular profession recognizes all these and also the remedies external to the body. It is the regular profession that has developed these internal remedies. It is the regular profession that gave us insulin, so valuable in treating diabetes; that gave us pituitrin, proving so valuable to the human family; that gave us diphtheritic antitoxin; that gave us typhoid vaccine, and many others. Not one of these valuable so-called internal remedies has been given to the world by the osteopath or the chiropractor. Yes, the regular profession does use and has given to mankind all of these new and valuable remedies. I might mention the internal secretion of the thyroid gland and of the suprarenal gland. Space will not permit me to enlarge upon the great value of these discoveries, all of which have been made by men who have studied and understand the basic medical sciences; and yet Dr. Sutherland, in the face of all these great benefits to mankind, accuses the medical profession of experimenting with serum. His colleagues do not use these, but on the other hand condemn them and say that the medical profession is experimenting with serum. Let me call the doctor's attention to the well-known fact that the diphtheria antitoxin has saved many thousands of lives and has prevented hundreds of thousands of children from contracting this most serious and fatal disease. Let me call attention to the fact that while, during the Spanish war, there were many deaths from typhoid fever, in the late World War there was not a single death in all the army on this side of the sea, due to the typhoid vaccine which Dr. Sutherland says the profes-

sion is experimenting with. Let me further call his attention to the fact that it was a member of the regular profession, Dr. Walter Reed, and his associates, all regular physicians, that discovered the cause of yellow fever, and this great discovery made possible the construction of the Panama canal, and this great discovery has almost entirely wiped yellow fever off of the globe. Let me call his attention to the further fact that in Brazil, South America, there are twenty varieties of poisonous snakes, some more poisonous than the rattlesnake, and the further fact that since the anti-snake bite serum has been discovered, more than ninety per cent of snake bites that receive the serum get well, whereas, before the use of the serum only 5 per cent recovered. Yet the medical profession is experimenting with serum.

We are experimenting with serum on rabbits and other animals and giving to the world prophylactic treatment that has proven one of the greatest physical benefits that ever came to mankind. The regular profession is now experimenting with serum for the cure of cancer, and we have reason to believe that those engaged in such earnest research will, in the end, be successful. Will Doctor Sutherland tell me what the osteopath or chiropractor has done, what discoveries they have made, to benefit mankind? This is a fair question, since he has publicly accused us of experimenting with a serum.

In the same communication referred to in this article, the editor of The Free Press is quoted in these words: "Osteopathy has long been recognized as among the scientific methods of healing human ills. Therefore the basic science bill should not receive favor at the hands of the Minnesota legislature." Is that statement true? Does either medical or general science recognize the methods of healing by either the osteopathic or the chiropractic as scientific? Is it scientific to attribute cancer of the stomach to a dislocated spine and try to cure cancer by adjusting the supposed dislocation? Let me assume that some member of the family of the editor of The Free Press had a sore throat with membrane forming on the tonsils. He can call a chiropractor or an osteopath, who will rub the neck and do it well; or he can call a regular physician who will take a small portion of the membrane from the throat, examine it in his laboratory and if he finds diphtheritic bacilli, he will inject into the patient a curative dose of antitoxin and the patient will be well in forty-eight hours, provided the injection is given in time. Some of your readers will remember a few years ago, in a Minnesota city, a case like this did occur, and the child died without the use of antitoxin or treatment by any physician familiar with the basic sciences, which are the foundation of medical science.

The Basic Science bill is now a law, and it is the best piece of legislation that has been passed in the interest of public health for many years. A few other states have enacted a similar law, and it will eventually eliminate those who are not qualified in the basic principle of medicine. Quoting Dr. Sutherland again, "Osteopathy advocates the recognition of remedies within the living body, a truth that can never die." I agree with him.

> "Truth crushed to earth will rise again
> The eternal years of God are hers
> But Error wounded writhes with pain
> And dies among her worshippers."

In conclusion let me quote Dr. Sutherland as saying of osteopathy: "Its basic principle is the same today as it was in 1874. Can the same be said of scientific medicine—the same today as in 1874?" My answer is, I admit Dr. Sutherland's statement as to osteopathy being the same today as it was in 1874. I also admit the truth of his statement when he asks the question: "Is scientific medicine the same today as in 1874?" Scientific medicine is not the same today that it was in 1874. Scientific medicine is based on education and hence progression. The regular profession has progressed and ever will, and it has produced many wonderful men all of whom have been well versed in the basic science of medicine, a few of whom are as follows: Hippocrates, Esculapius, Galen, Pare, Vasselius, Jenner, Koch, Lister, Flint, Gross, Reed, and last but by no means least, W. W. Mayo and his greater sons, William and Charlie. These are but a few of the great men that have made scientific medicine one of the greatest and most useful professions in the world.

Will Dr. Sutherland point me to any great men that osteopathy or chiropractic has produced?—J. W. Andrews, M.D., Mankato, Minn.

HARRISON NARCOTIC LAW POINTERS FOR PHYSICIANS ONLY

Every physician who wishes to have in his possession taxable narcotics for use in the practice of his profession, or who intends to write prescriptions for taxable narcotics, must register in Class 4 under the Harrison Narcotic Law, as amended, before obtaining narcotics or before writing narcotic prescriptions, with the Collector of Internal Revenue in the District where he intends to practice, and his registration must be renewed annually on or before July 1st of each year. No physician will be granted registration under the Harrison Act in a given District unless he is licensed to practice medicine in the District in which he makes application for registration under the Harrison Act. To be explicit, a physician who is licensed to practice medicine in Wisconsin, or for that matter in all other States of the Union except Minnesota, cannot be registered under the Harrison Act in Minnesota until such time as he is licensed to practice medicine in Minnesota.

Physicians who *dispense* tax exempt preparations must also register in Class 5. If registered in Class 4 no additional fee is required, but it is necessary that they be registered under Class 5 whether liable to tax in that capacity or not. If a physician only wishes to dispense tax exempt preparations and does not desire to dispense or write for taxable narcotics he must register in Class 5 and pay a $1.00 fee to the Collector

of Internal Revenue for each fiscal year or fraction thereof.

Many physicians have considerable trouble in distinguishing between *taxable* and *tax exempt* preparations and I will therefore explain the situation as follows:

Opium or cocoa leaves, their salts, derivatives, preparations thereof, etc., etc., are always taxable narcotics, and any preparation, remedy or mixture containing more than two grains of opium, or more than one-fourth of a grain of morphine, or more than one-eighth of a grain of heroin, or more than one grain of codeine, or any salt or derivative of any of them, in either a fluid or avoirdupois ounce, is a taxable preparation, whereas all preparations containing the above amounts or less are *tax exempt* preparations.

There is no limit upon the percentage of narcotic drugs external preparations may contain. In order to be within the exemption a preparation for external use, containing more than the maximum percentage of narcotic drugs specified above, must contain ingredients rendering it unfit for internal administration. Use for aural, ocular, rectal, urethral, or vaginal purposes is not regarded as external use and, therefore, preparations manufactured or used for such purposes containing more than the percentages of narcotic drugs indicated above are not within the exemption.

Any preparation containing cocaine, however, no matter how small the quantity, never becomes an exempt preparation.

A quick way for a busy physician to establish the *difference* between a *taxable* and a *tax exempt* preparation is as follows: Ordinarily a package containing a taxable narcotic has a commodity stamp attached, while a package containing a tax exempt preparation bears no stamp. The reason for this is that all taxable narcotics are required to have a commodity (or strip) tax stamp affixed thereto before being removed from the place of manufacture; whereas narcotic preparations coming within the class of so-called exempt preparations are not required to have a commodity stamp so affixed. When a physician purchases taxable narcotic drugs for office use he must use Government order forms. When he purchases tax exempt preparations he does not have to use Government order forms. He may order the latter on any piece of paper but he must give his registry number to the seller. To illustrate: If you order a pint of tincture of opium you can only purchase same from a person registered in Classes 1 or 2, by giving him a Government order form; whereas, when you wish to buy a pint of paregoric you may order same on any piece of paper bearing your signature and adding to your order the following words: "My registry number under the Harrison Narcotic Act is ———." A retail druggist may also furnish an aqueous narcotic solution to a practitioner on an order form without affixing a stamp thereto or becoming liable to additional tax.

The Harrison Law at no time is intended to interfere with a physician's legitimate practice of his profession. In other words, a physician may prescribe and dispense narcotics as in the past in all cases where his diagnosis warrants the prescribing or dispensing of narcotics for an ailment in the course of his *professional practice only.* The prescribing and dispensing of narcotics to a drug addict for the sole purpose of satisfying the addict's craving for the drug would not be considered a transaction consummated in the course of medical practice. To illustrate: A prescription calling for ten ¼ grain morphine sulphate tablets, or ten ¼ grain morphine sulphate tablets dispensed by a physician in the case of a patient suffering with lead colic, would be absolutely proper; whereas, the prescribing or dispensing of such narcotic drugs to an ordinary drug addict for the purpose of merely satisfying his addiction, would be in violation of Section 2 of the Act.

I find that virtually 99.9 per cent of physicians in all parts of the United States try their best to comply with the provisions of the Harrison Act and that they have very little sympathy with the .1 per cent that deliberately violate the provisions of the Harrison Act when commercializing an honored profession by the illegitimate distribution of narcotics into illegitimate channels. It is this small percentage of law breakers found in every stratum of society that has created the necessity of promulgating laws and regulations that at times appear troublesome and annoying to the average physician.

To cover everything in detail in this article for the guidance of the average physician in every instance that a physician may encounter in his every-day practice would require an article covering many pages and would be very dry reading and probably tend to confuse instead of enlighten, and I have therefore concluded this article will be of most service to the average physician by putting the situation in connection with the Harrison Act, as applicable to physicians, under two classifications, that is, what to do and what not to do, as follows:

Physicians should renew their registration on or before July first annually.	Physicians should not forget to renew their registration on or before July first each year.
They should write all narcotic prescriptions in ink or indelible pencel. Prescriptions, however, may be typewritten, but the physician's signature must be in his own handwriting in ink or indelible pencil. The physician's signature must be his customary signature.	Do not write narcotic prescriptions in lead pencil.
	Don't telephone narcotic prescriptions to a druggist.
	Don't post-date narcotic prescriptions.
A narcotic prescription must show the physician's registry number, the patient's full name and address, the date when written.	Don't write for or dispense narcotics to an ambulatory drug addict unless he is in a state of collapse, and then think twice before you act, as many addicts are experts at feigning collapse in order to secure a supply of narcotics.

Dispensing physicians must keep a record of all taxable and tax-exempt drugs, preparations and remedies dispensed, with the exception of such narcotics as are personally administered by the physician at the patient's bedside.

Don't forget to keep a record of all narcotics and narcotic preparations (both taxable and tax-exempt) dispensed by you, showing name of drug or preparation, to whom dispensed, patient's address, quantity dispensed, and date when dispensed.

Taxable narcotics for office use must be secured from a wholesale dealer, registered in Class 2, by giving him a Government order form, the duplicate of which the doctor must keep for two years.

Do not secure your narcotics for office use or dispensing purposes on prescription blanks.

When prescribing narcotics for a person suffering from an incurable disease either write the name of the incurable ailment on the prescription, or if preferable, the words "Exception 1 to Article 117."

Don't neglect to show all data on prescriptions, when waiting for incurable patients and old and infirm drug addicts, as shown in the column opposite, and as thoroughly explained in Pro. Mim. 316, which will be mailed to you free of charge upon application to either the Collector of Internal Revenue, St. Paul, or to the Narcotic Agent in Charge, Minneapolis, who will also supply a copy of the Harrison Law and all regulations promulgated thereunder upon request.

When prescribing narcotics for an aged and infirm drug addict, state so on your prescription, and also give age of patient, or if preferable, mark your prescription "Exception 2 to Article 117."

OBITUARY

Dr. J. G. Millspaugh

The following resolution was adopted by the Councilors of the Minnesota State Medical Association, following the death of Dr. Millspaugh, who was a member of the Council for a number of years preceding his death.

RESOLUTION

WHEREAS, our beloved friend and fellow councilor, J. G. Millspaugh, has passed from our midst, we, as members of the Council of the Minnesota State Medical Association, desire to express our sorrow.

He will ever remain in our memories as an ideal friend in every walk of life, and we regard his loss as irreparable. A brave man, honest and generous, he always endeavored to elevate his profession, and constantly labored to advance its interest. All the honors and all the responsibilities which came to him in the course of his career were proof of his real worth, for no one was ever more modest and less self seeking than he.

Therefore, be it resolved, that it only remains to us to offer to those who loved him most and best the assurance that we loved him too, and we share with them the sorrow that is most keenly theirs.

William F. Braasch
H. M. Workman
L. Sogge
W. W. Will
W. H. Condit
F. J. Savage
F. A. Dodge
G. S. Wattam
W. A. Coventry
E. A. Meyerding

Obituary notices regarding Dr. Millspaugh appeared in the March and April issues of Minnesota Medicine.

OF GENERAL INTEREST

A daughter was born to Dr. and Mrs. R. L. J. Kennedy of Rochester, Wednesday, May 4.

Dr. and Mrs. K. O. Haldeman of Rochester are the parents of a baby daughter, Jean Mary, born Tuesday, May 3.

Dr. F. W. S. Raiter of Cloquet, Minnesota, has left for six months of post-graduate work in Berlin and Vienna.

Dr. Hamline Mattson of Minneapolis has announced his leave of absence from practice to join the staff of the Mayo Clinic at Rochester.

Dr. Clarence Jacobson has associated himself with Dr. George Sherwood at Kimball, Minn. Dr. Jacobson is a graduate of the University of Minnesota in 1926.

Dr. Nellie Barsness of Saint Paul is a member of Dr. Mackenzie's Philadelphia Clinic party sailing from New York June 11 for Vienna for its regular summer course.

Miss Lila Esther Schaer of Minneapolis and Dr. A. R. Ellingson of Detroit Lakes, Minnesota, will be married the eleventh of this month, it has been announced.

Dr. Kobb, a graduate of the University of Minnesota in 1926, who has completed his internship in St. Mary's hospital at Duluth, has located at Cold Springs, Minnesota.

The marriage of Miss Elma Jean Hacking, daughter of Dr. and Mrs. Frank Hacking of Minneapolis, to William Howard Vilas of Pittsburgh, was solemnized May 4, 1927.

Dr. M. W. Kemp, formerly senior physician at the Newberry, Michigan, state hospital, has accepted the assistant superintendency of the state insane hospital at Fergus Falls, Minnesota.

Dr. and Mrs. A. G. Wethall of Minneapolis have announced the engagement of their daughter, Janet Beatrice, to Clarence Alfred Kuntz, also of Minneapolis. The wedding will take place this month.

Work is under way on a 36 bed addition to the Union hospital at New Ulm. The addition, which will be completed late in the summer, will be three stories and will be constructed at an estimated cost of $65,000.

Dr. W. T. Wenner, a graduate of the University of Minnesota in 1926, who has specialized in eye, ear, nose, and throat work, has opened his office in St. Cloud, with Dr. J. J. Gelz, who is also practicing the same specialty.

The cornerstone for the new St. Andrew's hospital in southeast Minneapolis was laid Sunday, May 15. The new structure is to be five stories in height and will have a capacity of sixty beds, increasing the present capacity to 100 beds.

Dr. William B. Roberts of Minneapolis sailed in May for Europe, where he will spend several months in study in the medical centers on the Continent and the British Isles. Dr. Roberts will resume his practice in Minneapolis in the fall.

Dr. Henry E. Michelson, director of the division of dermatology of the University of Minnesota, has returned from New Orleans, where he spent two weeks visiting Tulane University, and the government leprosy hospital at Carville, Louisiana.

Announcement has been made of the engagement of Miss Elizabeth Bacon, daughter of Dr. and Mrs. L. C. Bacon of Saint Paul, to Rev. Howard Y. Williams, pastor of the People's Church of Saint Paul. The wedding will take place June 15.

Dr. A. C. Strachauer of Minneapolis gave a lantern slide talk with presentation of specimens on "Carcinoma of the large bowel with particular reference to the rectum and rectosigmoid" before the Ramsey County Medical Society, April 25, 1927.

The Commission on Medical Education offers free copies of the preliminary report of the Commission to any interested readers. Request for copies should be addressed to the Commission on Medical Education, 215 Whitney Avenue, New Haven, Connecticut.

John F. Fulton, son of Dr. and Mrs. John F. Fulton of Saint Paul, Minnesota, who will complete his medical course at Harvard University this spring, has recently published a book on "Muscular Control and the Reflex Control of Movement" which has received favorable comment from the critics.

Dr. W. J. V. Osterhaut, of the Rockefeller Institute, gave the last of a series of Mayo Foundation lectures on plant pathology and physiology in relation to man in Rochester on the evening of May 3. His subject was "Some problems of cell physiology."

Announcement has been received of the marriage of Miss Ethel C. Pedersen of Tyler, Minnesota, and Dr. Peter E. Hermansen of Ivanhoe, Minnesota, which took place at the home of the bride's parents Saturday, April 23. Dr. and Mrs. Hermanson are now at home in Ivanhoe.

Dr. and Mrs. Arnt G. Anderson of Minneapolis left May 11 for a trip to Europe where Dr. Anderson will visit the various clinics in Edinburgh, Paris, Berne and Vienna. Dr. and Mrs. Anderson will return to Minneapolis some time in August.

Dr. E. M. McLaughlin of Winona returned last month from the wilds of Africa where he spent six months in hunting big game in company with Mr. and Mrs. E. L. King of Winona. Dr. McLaughlin reports that the hunt in Africa resulted in the bagging of 18 lions and two rhinoceroses.

A six-story addition and service building to cost $650,000 will be built this year for Abbott Hospital, Minneapolis, according to an announcement made in May. The institution will have 195 beds when the building program is finished late this year. There are 100 beds in the hospital at the present time.

Construction work will begin this summer on a new three story unit of the West Side General hospital in Saint Paul. The new unit will be built against the front of the present structure, which cares for thirty-five patients. The new building and the enlarged hospital will accommodate more than eighty patients. January 1, 1928, has been set as the date for completion of the hospital.

The Minnesota Society of Internal Medicine offers $250.00 cash for the best thesis received before January 1, 1928, by any "practicing physician, exclusive of members in this Society, in the State of Minnesota, who has been deemed most worthy to receive a prize in research in clinical medicine." Information may be obtained by writing to the Secretary, Dr. E. L. Gardner, 610 Yeates Building, Minneapolis, Minn.

The Duluth Clinic, Duluth, Minn., opened its new building on May 1.

A three-story brick structure, besides the basement, is the architectural design of a Duluth architect, Mr. William Chalmers Agnew, and represents a total expenditure, including equipment, of about $250,000.00.

At present the building cares for the needs of seventeen physicians, two dentists, and a drug department. It is on the corner of Second Avenue West and Second Street, just outside the congested retail district.

Guests at the State Medical Association to be held in Duluth this month will have an opportunity of inspecting the new clinic building.

In response to an invitation from Dr. J. L. Rothrock, a group of St. Paul physicians, particularly interested in obstetrics and gynecology, dined at the Minnesota Club on April 16, 1927, and organized the St. Paul Obstetrical and Gynecological Society. The society will hold regular monthly meetings. Programs will consist of the current obstetrical and gynecological literature with an occasional paper on special subjects, or talks from guest obstetricians.

Officers were elected as follows: Dr. John L. Rothrock, president; Dr. Lee W. Barry, vice president; Dr. Everett C. Hartley, secretary-treasurer.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

Fifty-ninth Annual Meeting
Duluth—June 30 to July 2, 1927
Headquarters—Hotel Duluth

OFFICERS

W. F. Braasch, President - - - - Rochester
H. B. Aitkens, 1st Vice President - Le Sueur Center
S. H. Boyer, 2nd Vice President - - - Duluth
F. E. Gray, 3rd Vice President - - - Marshall
E. A. Meyerding, Secretary - - - - Saint Paul
E. R. Hare, Treasurer - - - - - Minneapolis

LOCAL COMMITTEES

General Chairman—F. H. Magney.
General Secretary—H. C. Anderson.
Banquet and Entertainment Committee—C. A. Scherer, F. J. Elias, M. M. Fischer, Gordon MacRae, D. E. Seashore, F. W. Spicer.
Civic Clubs Committee—C. L. Haney.
Clinical Material Committee—C. O. Kohlbry, J. R. Manley, L. L. Merriman, D. F. Pennie.
Convention Hall Committee—R. S. Forbes, J. E. Power, P. S. Rudie, T. O. Young.
Exhibits Committee—B. F. Davis, P. G. Boman, F. J. Lepak.
Publicity Committee—E. Z. Shapiro, W. C. Martin, E. L. Cheney.
Reception Committee—J. R. Kuth, L. A. Barney, E. L. Tuohy.
Reunions and Luncheons Committee—W. G. Strobel, S. E. Urberg.
Hotel Accommodations Committee—T. G. Clement, L. R. Gowan, W. E. Hatch, Harry Klein, F. N. Knapp.

SAINT LOUIS COUNTY MEDICAL SOCIETY

President - - - - - - - - F. J. Hirschboeck
Vice President - - - - - - - - C. W. Bray
Secretary - - - - - - - - F. J. Lepak

PROGRAM

Wednesday, June 29, 1927
6:30 P. M.
Meeting of the Council
Parlor C
Hotel Duluth

Thursday, June 30, 1927
8:00 A. M.
Meeting of the House of Delegates
English Room
Hotel Duluth

PRESIDING OFFICERS

E. L. Gardner and F. J. Savage, Chairmen.
J. A. Myers and H. W. Meyerding, Secretaries.

THURSDAY AFTERNOON—JUNE 30
1:45 P. M.
Ball Room—Hotel Duluth

Medical Clinic
Hilding Berglund - - - - - Minneapolis
The Parathyroid: Retrospect and Prospect
A. M. Hanson - - - - - - Faribault

Symposium on Immunization and Acute Infectious Diseases

"Immunization—Diphtheria and Scarlet Fever"
W. P. Larson - - - - - - Minneapolis
"Reactions and Observations in 2000 Immunizations"
D. E. McBroom - - - - - - Faribault
"Measles"
J. T. Christison - - - - - Saint Paul
"Pertussis"
E. J. Huenekens - - - - - Minneapolis
Discussion—
I. A. Abt - - - - - - - Chicago, Ill.
Diagnosis and Treatment of Non-Opaque Foreign Bodies in Bronchi
K. A. Phelps - - - - - - - Minneapolis

INTERMISSION

Symposium on Pulmonary Tuberculosis

"Pathogenesis of Tuberculosis"
H. E. Robertson - - - - - - Rochester
"Immobilization in the Treatment of Pulmonary Tuberculosis"
E. K. Geer - - - - - - - - Saint Paul
"Surgical Treatment of Pulmonary Tuberculosis"
A. A. Law - - - - - - - Minneapolis
Discussion—
S. W. Harrington - - - - - Rochester
F. F. Callahan - - - - - - Pokegama

THURSDAY EVENING—JUNE 30
8:00 P. M.
MEDICAL ECONOMICS MEETING
Ball Room—Hotel Duluth

"Illinois Lay Education Program"
Miss B. C. Keller - - - - - - Chicago
"Minnesota Public Health Education Program"
G. A. Earl - - - - - - - - Saint Paul
"Medical Economics"
M. L. Harris - - - - - - - Chicago
"Legislation and the Doctor"
H. M. Johnson - - - - - - - Dawson

FRIDAY MORNING—JULY 1
8:00 A. M.
Ball Room—Hotel Duluth

Calcium Therapy in the Functional Nervous Disorders
C. C. Gault - - - - - - - Owatonna
Non-Penetrating Abdominal Injuries
W. R. Humphrey - - - - - Stillwater
Vertigo From an Ophthalmological Standpoint
C. L. Oppegaard - - - - - Crookston
Application of Graphic Methods in Medicine
R. E. Scammon, Ph.D. - - - Minneapolis

Symposium on Gall Bladder and Liver

"Physiology of Liver and Gall Bladder"
F. C. Mann - - - - - - - - Rochester
"Present Status of Cholecystography"
B. R. Kirklin - - - - - - - Rochester
"Principles of Surgery of the Gall Bladder"
Arnold Schwyzer - - - - - Saint Paul
Discussion—
J. P. Schneider - - - - - Minneapolis
A. R. Colvin - - - - - - - Saint Paul

INTERMISSION

Non-Operative Treatment of Fractures (Moving Pictures)
F. D. Dickson and
R. L. Diveley - - - - Kansas City, Mo.
Radiographic Interpretation
P. M. Hickey - - - - Ann Arbor, Mich.
Physiotherapy
H. E. Mock and
John Coulter - - - - - - - Chicago, Ill.

FRIDAY NOON, 12:30 O'CLOCK
MEETING OF HOUSE OF DELEGATES
English Room—Hotel Duluth

FRIDAY AFTERNOON—JULY 1

Renal Pathology (Demonstration of Specimens)
B. H. Hager and
E. H. Hargis - - - - - - - Rochester
Cancer of the Uterus
J. C. Litzenberg - - - - - Minneapolis
The Cervix as a Focus in Chronic Disease
C. H. Mayo - - - - - - - - Rochester
Present Trends in Gynecology
J. O. Polak - - - - - - Brooklyn, N. Y.

INTERMISSION

Symposium on Gastro-Intestinal Tract

"Physiology of Gastro-Intestinal Tract"
W. C. Alvarez - - - - - - - Rochester
"Control of the Pylorus"
C. B. Wright - - - - - - - Minneapolis

"X-Ray Diagnosis of Disease of the Stomach"
P. M. Hickey - - - - - - Ann Arbor, Mich.
"Gastric Surgery"
D. C. Balfour - - - - - - - Rochester
"Treatment of Chronic Ulcerative Colitis"
J. A. Bargen - - - - - - - - Rochester

THE ANNUAL BANQUET

Ball Room—Hotel Duluth
FRIDAY EVENING, JULY 1, 6:30 P. M.

Toastmaster—C. H. Mayo - - - - - Rochester
Introduction of Guests
Address of Welcome
W. A. Coventry - - - - - - - Duluth
President Chamber of Commerce
Address
Hon. Theodore Christianson - - - Saint Paul
Governor State of Minnesota
The Women's Auxiliary
Mrs. J. T. Christison, President - - Saint Paul
President-Elect
State Association
H. M. Johnson, Past President - - Dawson
W. F. Braasch, President - - - Rochester
President-Elect
Dancing

SATURDAY MORNING—JULY 2

Ball Room—Hotel Duluth
8:00 A. M.

Rectal Fistula in the Tuberculous
W. A. Fansler - - - - - - - Minneapolis
Value of Refraction in Children
W. H. Fink - - - - - - - Minneapolis
Pediatric Clinic
I. A. Abt - - - - - - - - Chicago, Ill.
Coöperative Management of Gastric Ulcer
J. B. Carey - - - - - - - Minneapolis
Five Years of Hospital Obstetrics
G. P. Dunne - - - - - - - Saint Paul
Malarial Treatment of Syphilis of the Nervous System
J. C. Michael - - - - - - - Minneapolis
The Treatment of Acute Empyema
J. M. Hayes - - - - - - - Minneapolis

Symposium on Heart

"Bacteriology of Heart Disease"
B. J. Clawsen - - - - - - - Minneapolis
"Diphtheric Heart"
M. H. Nathanson - - - - - - Minneapolis
"Hypertension"
R. H. Major - - - - - Kansas City, Mo.
"Coronary Disease"
W. S. Middleton - - - - Madison, Wis.
"Heart Disease From the Insurance Standpoint"
C. N. McCloud - - - - - - - Saint Paul
Clinic on Diseases of the Circulatory System
R. H. Major - - - - - Kansas City, Mo.
W. S. Middleton - - - - Madison, Wis.

WOMEN'S AUXILIARY

of the Minnesota State Medical Association

OFFICERS

President, Mrs. J. T. Christison - - Saint Paul
First Vice President, Mrs. J. D. Lyon - Minneapolis
Second Vice President, Mrs. B. F. Davis - Duluth
Third Vice President, Mrs. J. J. Gelz - Saint Cloud
Recording Secretary, Mrs. G. R. Hagaman - Saint Paul
Corresponding Secretary, Mrs. J. S. Reynolds Minneapolis
Treasurer, Mrs. E. C. Eshelby - - - Saint Paul
Auditor, Mrs. D. Kalinoff - - - - Stillwater

LOCAL AUXILIARY COMMITTEES

President of the Women's Auxiliary of the St. Louis County Medical Society—Mrs. Ben F. Davis.
General Chairman—Mrs. F. N. Knapp; Vice Chairman —Mrs. F. J. Elias.
Luncheon Committee—Mrs. E. E. Webber, Mrs. Cyril M. Smith, Mrs. D. E. Seashore, Mrs. Arthur Collins, Mrs. A. G. Athens, Mrs. Robert Forbes, Mrs. E. L. Armstrong, Mrs. G. E. Power, and Mrs. E. L. Cheney.
Transportation Committee—Mrs. W. A. Coventry, Mrs. F. W. Spicer, Mrs. A. L. Barney, Mrs. Le Roy E. Doolittle, Mrs. W. G. Strobel, and Mrs. W. E. Hatch.
Information and Registration—Mrs. O. E. Heimark, Mrs. F. J. Lepak, Mrs. Franklin Raiter, and Mrs. C. A. Scherer.
Style Show—Mrs. Mark Tibbetts and Mrs. Gordon MacRae.
Badges—Mrs. T. G. Clement and Mrs. C. H. Schroder.
Reception Committee—Mrs. F. W. Briggs, Mrs. W. H. Magie, Mrs. F. H. Magney, Mrs. F. J. Hirschboeck, Mrs. K. E. Bergquist, Mrs. M. S. Hirshfield, Mrs. L. Q. Greeley, and Mrs. O. A. Oredson.
Women are requested to register on the mezzanine floor of the Hotel Duluth.

PROGRAM

THURSDAY NOON—JUNE 30

Annual Luncheon.
1:00 P. M. Northland Country Club. Mrs. A. E. Walker will act as toastmistress. Program.

FRIDAY—JULY 1

Automobile Ride.
Cars leave Hotel Duluth 10:00 o'clock a. m. Ride is followed by a Style Show at the home of Mrs. F. J. Elias, Morgan Park.
Annual Meeting.
2:30 P. M. Hotel Duluth.
Annual Banquet and Dance.
6:30 P. M. Hotel Duluth. All attending physicians and their wives are invited.

ANNOUNCEMENTS

Annual Banquet. The committee in charge of the Annual Banquet requests that reservations be made early. Tickets may be purchased at the Registration desk at the Hotel Duluth. Tickets must be purchased before noon Friday, July 1.

Alumni Association of the Medical School of the University of Minnesota. Annual Meeting 12:30 o'clock Friday, July 1, Hotel Duluth.

Rush Medical School Alumni banquet 12:30 o'clock Friday, July 1, Hotel Duluth.

Reunion. The class of 1902 of the Medical School of the University of Minnesota will have a reunion dinner at the Hotel Duluth at 6:30 o'clock Thursday evening. They will celebrate their twenty-fifth anniversary.

Friday noon. Luncheon to visiting women physicians given by women physicians of St. Louis County. Place to be announced later.

There will be a meeting of the medical officers of the World War Thursday, June 30, at 8 P. M.

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

An address, which was open to the public, entitled "The control of infectious diseases by vaccination," by Dr. W. P. Larson of the University of Minnesota medical school, was the feature of the regular meeting of the West Central Minnesota Medical Society held at Starbuck, Minnesota, April 30. Preceding the lecture members of the society and their ladies were entertained at dinner by Drs. C. R. Christenson, L. L. Gibbon, O. V. Opheim and Herman Linde.

The next meeting of the Society will be held June 19 at Ortonville and will be in the form of an outing. Drs. Charles Bolsta, B. R. Karn, H. J. Shelver and D. M. O'Donnell of Ortonville will act as hosts at the June meeting.

INTERSTATE POST-GRADUATE ASSEMBLY OF NORTH AMERICA

Among the distinguished foreign members of the profession who will visit America in October as guests of the Interstate Post-Graduate Assembly of North America at the world meeting at Kansas City, Missouri, are the following:

Dr. Gustav Alexander, Prof. of Diseases of the Ear, University of Vienna, Vienna, Austria.

Dr. Eugen Bleuler, Prof. of Psychiatry, University of Zurich, Zurich, Switzerland.

Sir John F. H. Broadbent, Internist (Specializes in heart and chest cases), London, England.

Prof. Emile de Grosz, Prof. of Ophthalmology, Royal Hungarian University Eye Clinic No. 1, Budapest, Hungary.

Dr. Ersilio Ferroni, Prof. of Obstetrics and Gynecology, Royal University of Florence, Florence, Italy.

Dr. Guiseppe Franchini, Prof. of Pathology, Royal University of Bologna, Bologna, Italy.

Dr. Sigmund Frankel, Prof. of Experimental Medicine, Imperial Royal University of Vienna, Vienna, Austria.

Dr. R. P. Ranken Lyle, Prof. of Obstetrics and Gynecology, University of Durham, Newcastle-upon-Tyne, England.

Prof. Adolphe Maffei, Chief of the Hospital Service and Head of the Surgical Department of the Pediatric Clinic, University of Brussels, Brussels, Belgium.

Mr. John S. McArdle, F.R.C.S., Prof. of Surgery, University College, Dublin, Ireland.

Dr. Otto J. Kauffman, Prof. of Medicine, University of Birmingham, Birmingham, England.

Dr. Jan Schoemaker, Chief Surgeon, City Hospital, The Hague, Holland.

Dr. I. Snapper, Prof. of Pathology, University of Amsterdam, Amsterdam, Holland .

Sir John Bland Sutton, Bt., London, England.

Prof. Guido Tizzoni, Director of the Institut of General Pathology, University of Bologna, Bologna, Italy.

Sir William DeCourcy Wheeler, Dublin, Ireland.

Mr. Garnett Wright, F.R.C.S., Honorary Surgeon, Salford Royal Hospital; Lecturer in Surgical Pathology, Victoria University, Manchester, England.

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

The forty-sixth semi-annual meeting of the Southwestern Minnesota Medical Society was held at Fulda, Minnesota, April 28, 1927. At 3:30 P. M. Dr. Wm. O'Brien, Pathologist at the University of Minnesota, gave a paper on "Diseases of the Thyroid Gland." At 7:30 P. M. Dr. L. W. Barry, Obstetrician, St. Paul, Minn., gave a paper entitled "Management of the Posterior Position, Eclampsia, and Placenta Prævia."

The Society voted to spend about $250.00 out of the Society treasury for University Extension Course, the first meeting of which was held at Windom, May 9, 1927.

NOTICE FORMER MEDICAL OFFICERS

The Annual Meeting and Stag Party of the Northwestern Medical Officers Association will be held at Duluth, Thursday evening, June 30, according to arrangements made.

The meeting will not interfere with any of the doings of the State Medical Association which will then be in session. We want all former medical officers who will attend the state medical meeting to be with us that night in order to get some idea of how many we should prepare for. We want all of you to send a card to Dr. W. G. Strobel, Duluth Clinic, Duluth, Minnesota, and tell him that you will be there. If you will let us know that you are coming, we will try not to disappoint you.

W. F. Maertz, M.D., President,
New Prague, Minnesota.

STEARNS-BENTON COUNTY MEDICAL SOCIETY

The Stearns-Benton County Medical Society held its monthly meeting Wednesday, April 27, 1927, at Albany, Minn., beginning with a six o'clock dinner. Drs. Mahwold and Buscher of Albany were in charge of arrangements. Thirty-three doctors were in attendance. The following program was presented:

1. Tinnitus Aurium—Dr. J. J. Gelz, St. Cloud, Minn.
   Discussion—Dr. H. E. McKibben, St. Cloud, Minn.
2. Intussusception in Infants—Dr. F. J. Schatz, St. Cloud, Minn.
   Discussion—Dr. P. E. Stangl, St. Cloud, Minn.
3. Surgical Problems—Dr. A. A. Meyer, Melrose, Minn.
   Discussion—Dr. Richard N. Jones, Richmond, Minn.
4. Presentation of Case Reports—Drs. A. Mahwold and Julius Buscher, Albany, Minn.
   Discussion—Dr. J. P. McDowell, St. Cloud, Minn.
   Discussion—Dr. J. P. Hanson, St. Cloud, Minn.

The annual election of officers resulted as follows: Dr. Geo. Sherwood, Kimball, president; Dr. Fred Richardson, Belgrade, vice-president; Dr. P. E. Stangl, St. Cloud, secretary; Dr. Goehrs, St. Cloud, delegate, and Dr. R. N. Jones, Richmond, elected to the board of censors.

New members admitted to the society are: W. T. Wenner, St. Cloud, and Clarence Jacobson, Kimball, Minnesota.

CHISAGO-PINE COUNTY MEDICAL SOCIETY

Members of the Chisago-Pine County Medical Society were entertained at a banquet by Dr. H. L. Taylor and Dr. F. F. Callahan April 26 at Pokegama Sanatorium.

The following program was given:

Demonstration of Some Unusual Lung Conditions—Dr. F. F. Callahan.

Development of Scarlet Fever Vaccine—Dr. W. P. Larson, University of Minnesota.

Clinical Experience With Immunization of Children

Against Diphtheria, Scarlet Fever, Whooping Cough, and Poliomyelitis—Dr. D. R. Ramsey, St. Paul.

The following officers were elected: Dr. C. W. Paulson, North Branch, president; Dr. F. F. Callahan, Pokegama, vice president; Dr. C. G. Kelsey, Hinckley, secretary.

The President and Vice President were elected respectively delegate and alternate to the State Medical Society meeting.

Representative Therrien of the Minnesota State Legislature was present and the society had the pleasure of listening to a short after-dinner speech by him about recent legislation, notably the Basic Science Bill.

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

The Redwood-Brown County Medical Society held its annual meeting May 3 at the Union Hospital, New Ulm. Following a banquet, served by the hospital nurses, Dr. Stanley R. Maxeiner of Minneapolis read a paper on "Surgery of Tuberculous Patients." Dr. H. P. Wagener of Rochester gave an address, illustrated by lantern slides, on "The Effect of Various Diseases on the Fundus."

Officers elected for the coming year are: President, Dr. Franklin Strickler, Sleepy Eye; vice-president, Dr. George B. Weiser, New Ulm; secretary-treasurer, Dr. William A. Meierding, New Ulm. Dr. George B. Weiser was appointed alternate delegate to the State meeting for 1927 to act as substitute for Dr. Albert Fritsche, who is now in Europe. Dr. Theo. Hammermeister of New Ulm was elected delegate for the 1928 meeting with Dr. J. C. Rothenburg, Springfield, as alternate. Dr. O. J. Seifert, New Ulm, was elected censor for three years.

MINNESOTA SOCIETY OF INTERNAL MEDICINE

The Minnesota Society of Internal Medicine will hold its next meeting Monday, June 6, with an all-day session at the University Hospital, Minneaplis, followed by a dinner in the evening at the Minneapolis Club.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

Abbott Laboratories

Tablets Triturates Ephedrine Hydrochloride-Abbott,

Capsules Ephedrine Hydrochloride-Abbott, ¾ grain.

Ephedrine Hydrochloride Solution-Abbott, 3%.

Parke, Davis & Co.

Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.065 Gm. (1 grain).

Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.13 Gm. (2 grains).

Glaseptic Ampoules Mercury Succinimide-P. D. & Co., 0.01 Gm. (1/6 grain).

Sigurd E. Roll

Viking Palatable Cod Liver Oil.

Swan-Myers Co.

Ephedrine Hydrochloride-Swan-Myers

Capsules Ephedrine Hydrochloride-Swan-Myers, 0.0324 Gm. (½ grain).

United States Standard Products Co.

Rabies Vaccine-U.S.S.P. (Semple Method).

TRUTH ABOUT MEDICINES

Culture Bacillus Acidophilus-United Laboratories.—A pure culture of *B. acidophilus* in bottles, each containing about 120 c.c. It contains not less than six hundred millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1926, p. 211, "Lactic Acid-Producing Organisms and Preparations." United Laboratories, Inc., Pasadena, Calif. (Jour. A. M. A. April 9, 1927, p. 1150.)

Abbott's Mineral Oil Emulsion.—A mixture composed of liquid petrolatum, 40 c.c.; agar, tragacanth and gelatin, 2 Gm.; sugar and flavoring, 2 Gm., and water sufficient to make 100 c.c. It has the action of liquid petrolatum. Abbott Laboratories, North Chicago, Ill.

Ephedrine Hydrochloride-Swan-Myers.—A brand of Ephedrine Hydrochloride-N.N.R. For a discussion of the actions, uses and dosage of ephedrine hydrochloride, see The Journal, A. M. A., March 19, 1927, p. 925. The product is marketed in substance and as Capsules Ephedrine Hydrochloride-Swan-Myers, 0.0324 Gm. (½ grain). Swan-Myers Company, Indianapolis.

Ephedrine Hydrochloride-Abbott. — This product (The Journal, A. M. A., March 19, 1927, p. 925) is also supplied in the form of Tablet Triturates Ephedrine Hydrochloride-Abbott, ½ grain, Capsules Ephedrine Hydrochloride-Abbott, ¾ grain, and Ephedrine Hydrochloride Solution-Abbott, 3%. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A. April 16, 1927, p. 1235.)

Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.065 Gm. (1 grain).—Each c.c. contains mercuric salicylate (New and Non-Official Remedies, 1926, p. 247) 0.065 Gm.; apothesine, 0.01 Gm.; in olive oil, 1 c.c. Parke, Davis & Co., Detroit.

Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.13 Gm. (2 grains).—Each c.c. contains mercuric salicylate (New and Non-official Remedies, 1926, p. 247) 0.13 Gm.; apothesine, 0.01 Gm.; in olive oil, 1 c.c. Parke, Davis & Co., Detroit.

Glaseptic Ampoules Mercury Succinimide-P. D. & Co., 0.01 Gm. (1/6 grain).—Each c.c. contains mercuric succinimide-N.N.R. (New and Non-official Remedies, 1926, p. 248) 0.01 Gm.; apothesine, 0.005 Gm.; in physiological solution of sodium chloride, 1 c.c. Parke, Davis & Co., Detroit. (Jour. A. M. A. April 30, 1927, p. 1398.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of January 6, 1927.

The regular monthly meeting of the Minneapolis Surgical Society was held January 6, 1927, the president, Dr. E. C. Robitshek, presiding.

The following case of injury of the rectum was reported by Dr. W. D. White:

K. W., nineteen years old, was brought to the Minneapolis General Hospital in the early evening of July 13, 1926. He stated that a short time previously he had been playing kitten ball. The bat was broken and the handle part was about 18 inches to two feet long and the end very sharp. He had put the blunt end of the bat on the ground and had put a small piece of board across the upper or sharp end and sat on the board. While he was sitting on this the board slipped and slid off and allowed him to sit down forcibly on the sharp end of the stick. The sharp end entered the rectum. The stick was pulled out by himself and a companion. He had immediate pain and bleeding from the rectum and he was carried into the field house and shortly afterward he was taken to the Minneapolis General Hospital.

Examination.—Examination showed that he was in distinct shock and there was very marked rigidity of the abdomen. His pulse was rather rapid and he was distinctly pale. He was taken to the operating room and prepared for a laparotomy. Under general anesthesia a midline supra-pubic incision was made extending to the left and a little above the ubilicus. On opening the abdomen a moderate amount of a cloudy watery fluid was seen but there was no fecal odor. The intestines were packed off and the pelvis exposed. It could be seen that in the fundus of the bladder was a definite laceration which admitted the finger into the interior of the bladder. Careful examination showed no other place where the peritoneum had been torn. Apparently there was no opening to the wall of the rectum into the peritoneal cavity but when an assistant put his finger in the rectum it could be seen that the stick had penetrated the anterior wall of the rectum and had passed through the posterior wall of the bladder out through the fundus of the bladder. The laceration in the fundus of the bladder was closed with fine chromic suture. No fecal material was seen.

Postoperative Course.—He was given hypodermoclysis and usual postoperative care. A retention catheter was placed in the bladder but considerable difficulty was experienced in keeping it in; in fact we were unable to keep the catheter in the bladder. The bladder would fill up and he would discharge urine through the rectum. On July 15, 1926, he had a temperature of 102 and his pulse was 130. He had a rather stormy time until about the middle of July. During this time he had bronchopneumonia. By the 23rd of July he was somewhat improved but the wound in the abdomen had spread open and he was discharging urine through the wound. Methylene blue given by mouth was expelled in the urine through the abdominal wound and also through the rectum. On July 23rd he was taken to the operating room and the wound was pulled together, using heavy silk mattress sutures tied over gauze. Two drainage tube were used. One to drain the length of the incision and one to the space above the bladder. The abdominal wound gradually healed up and the drainage tubes were removed. On August 1, 1926, his temperature was normal and his pulse was 110. He gradually improved and left the hospital on September 23, 1926. He had been up and around the hospital for a week or two.

Today his general condition is very good. About two weeks ago, that is about December 23, 1926, he stopped discharging urine through the rectum. The abdominal wound has been perfectly clean and dry. He has gained about 40 pounds in weight and his general strength is very good.

Before he left the hospital a proctoscopic examination was made and a small pit could be seen in the anterior wall of the rectum where the stick penetrated. You will notice that there is some diastasis of the rectus muscles. He stated this does not bother him. I told him that this could be closed in case it does bother him. He has no pain and feels fine.

Penetrating wounds of the rectum are not so very common in private practice. I feel that if we could have kept the retention catheter in his bladder he would have been spared considerable difficulty as I think that allowing his bladder to become distended favored the rupture of the wound in the bladder which resulted in allowing the urine to escape through the abdominal wall.

Discussion: Dr. R. C. Webb recalled a case similar to Dr. White's which he had operated upon in Evacuation Hospital Number Eight during the St. Mihiel Battle. This man received a bullet wound just above the pubis in the midline and from this wound urine was escaping. The wound of exit was in the midline posteriorly in the lower third of the sacrum and from this wound feces was escaping. After consultation with Colonel A. M. Shipley, now Professor of Surgery in the University of Maryland, a laparotomy was done by Dr. Webb. The bullet had not entered the peritoneal cavity. Closure was made and the wounds of entrance and exit were given the usual debridement operation. A catheter was left in the bladder. The patient made an uncomplicated recovery. There were two holes in the bladder and two holes in the rectum. The contiguous holes in the bladder and rectum were not treated actively and as in Dr. White's patient treatment of these was not necessary.

A case was reported by Dr. T. H. Sweetser to illustrate a urinary infection which may be confused with appendicitis.

S. W., a girl aged 19, was admitted to the Minneapolis General Hospital August 8, 1925, complaining of pain in the right lower abdominal quadrant. Three weeks previously she had been seized with severe pain

in the right side of the abdomen and generalized abdominal tenderness. There had been nausea and vomiting soon after the onset of pain. Pain had become less severe by the next day but both pain and tenderness had continued until after her admission to the hospital. There had been no urinary disturbances and only once had the pain radiated to the back and down

Fig. 1.

the right thigh. There was no leukorrhea. Her family physician sent her to the hospital advising appendectomy, especially in view of the history of a similar attack in 1924.

On admission, temperature was 99.4° and pulse 98. There was tenderness in the right lower abdominal quadrant but no rigidity or muscle spasm. On the next day there was slight rigidity in the right lower quadrant. Leukocyte count was 10,000 with 88 per cent polymorphonuclears while the urine contained fifteen to twenty-five pus cells and one or two erythrocytes per high power field. The history and physical findings being not typical of appendicitis, the surgeon asked me to do a cystoscopy. Cystoscopy on August 31st showed two ureteral openings on the right side, one on the ureteric ridge and one just lateral to it. The lateral opening was large and showed some granulation tissue at its edge. Catheters were passed through one of these openings and through the left ureteral opening easily. The cystoscope was then withdrawn and reinserted and a catheter passed through the third ureteral opening easily. Phenolphthalein injected intravenously appeared in seven minutes from the left ureter and in eleven and one-half and thirteen and one-half minutes respectively from the two right ureters. Pyelograms (Figs. 1 and 2) showed double right renal pelvis and double right ureter without any intercommunication, and pyelitis of both parts on the right renal pelvis. Her condition improved greatly but for some obscure reason she did not leave the hospital on the date planned. On September 8th, she suffered another attack of abdominal plain without nausea or vomiting. On the next day the pain and tenderness were localized

Fig. 2. Introduction of sodium iodide solution through both right ureteral catheters. Note dilatation of both pelves and of the calyces. Note also relationship of the ureters to one another.

in the right lower abdomen. The attack subsided after two days. Cystoscopy on September 12th demonstrated cloudy urine from both right ureteral meati. A silver nitrate solution was injected into the renal pelves on the right side. Her subsequent history was uneventful and a year later there had been no recurrence. The congenital abnormality of the upper urinary tract in my opinion increases the chances of recurrence of the infection. The problem in differential diagnosis presented by this patient, even in the last attack in the hospital, was not simple. It is a problem well worth a place in our memory.

The paper of the evening, "Diverticula of the Duodenum," was read by Dr. W. P. Herbst, and illustrated by lantern slides. (The paper is published in this number of MINNESOTA MEDICINE on page 364.)

An executive meeting of the Society followed the scientific program. Doctors Robert C. Coffey of Portland, Oregon, and John B. Deaver of Philadelphia, were elected honorary members.

THEODORE H. SWEETSER, M.D.
Secretary.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of March 9, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 9, 1927, at 8 o'clock. Dinner was served at 7 o'clock.

The meeting was called to order by the President, Dr. F. E. Burch. There were 33 members present.

The minutes of the February meeting were read and approved.

The president appointed Drs. Head, Mann and Wilcox a committee to draw up resolutions on the death of Dr. A. W. Abbott for report at the next meeting of the Academy.

After some discussion a motion was carried that the report of cases be given after the reading of papers, except that when patients are present the case may be reported before the papers are read.

Dr. E. M. Hammes (St. Paul) presented a patient and reported the history of a case of von Recklinghausen's disease with intracranial complications, as follows:

The family history is negative. No member of the family had any skin tumors, moles, or freckles.

The patient stated that since childhood he has had multiple small nodules over his body, especially the back and lower extremities, without any special change in their size until two years ago. At that time he noticed that they were gradually becoming larger and more numerous. He began to stagger, had occasional headaches and emesis, and gradually developed a weakness of the *left* half of the face. Along with this he noticed some buzzing in both ears, especially in the *right*.

A lumbar puncture was done. The spinal fluid was normal throughout except for a positive Wassermann test. (Evidently a laboratory error.) The blood Wassermann was negative. He was placed on antiluetic treatment, without any benefit. He is gradually growing worse and slowly losing in strength and weight—about 30 pounds in two years.

Clinically he presents multiple nodules over his entire body, on the head, extremities, and trunk. These vary from a minute nodule to tumors the size of a walnut. They are of moderate consistency, quite freely movable, and not tender. He furthermore manifests small bluish pigmented areas, which are supposedly the forerunners of the developing tumors.

Neurologically he has a positive Romberg, walks with a staggering gait to the left, and has involvement of the left fifth, sixth, and the peripheral left seventh. He complains of buzzing in both ears, more marked in the right, but his hearing is quite normal. There is ataxia of the left upper extremity. All other findings are normal. He presents no bony changes or curvatures.

A report of one of the tumor masses examined by Dr. E. T. Bell, Pathologic Department of the University of Minnesota, shows that the tumors are neurofibromata.

This patient evidently has a multiple neurofibromatosis with a tumor involving the left eighth, producing a neurological picture of a left cerebello-pontine angle tumor. There is perhaps also some involvement of the right eighth nerve, which would explain the marked buzzing in the right ear.

Dr. H. Z. Giffin (Rochester) read his Inaugural Thesis, which was entitled "Splenectomy."

DISCUSSION

Dr. Mann (Minneapolis): This is certainly a most interesting paper, very well presented, and on an interesting subject. There are two or three things I would like to ask about.

(1) I wish, if Dr. Giffin can, he would tell us a little more about the relation of splenectomy and hemophilia. In hemophilia there is often a deficiency in the platelets and after splenectomy on any of these patients there is an increase in the platelets.

(2) My other thoughts run to the physiology and physiological pathology of the results of a large spleen and its effect on the blood. What is it that gives the hemolysis a greater tendency and where does it come from? There is a more easy destruction of the blood and the spleen goes ahead and does that too.

(3) Why is the bone marrow stimulated? Is it a toxin that stimulates it; is it a hormone; or what is it?

I would like to have Dr. Giffin go over the real things that the spleen does when it behaves properly.

Dr. Judd (Rochester): Splenectomy may be a fairly simple operation in cases in which the spleen is not too large or too adherent, but on the other hand it may be a most difficult procedure. The chief difficulty results from the adhesions which may form between the spleen and the stomach and the colon, the spleen and the omentum, the spleen and parietal peritoneum to the outside, and especially the adhesions that may be present between the upper pole of the spleen and the under surface of the diaphragm. In some cases it is necessary to open into the capsule of the spleen in order not to traumatize the other tissues in freeing the organ. The oozing adhesions which may be left must be sutured over either on the diaphragm or the parietal peritoneum. It is not often that one has great difficulty with bleeding from the pedicle of the spleen. The veins may be very large as a result of compensatory circulation, particularly in cases of cirrhosis, and it is in these that hemorrhage may be difficult to control. Dr. Giffin's report shows the number of hospital deaths in each group. In most of them it resulted from hemorrhage or thrombosis of the splenic veins. Many of these patients were operated upon some years ago, and with the developments in technic which have taken place certain of these difficulties could now be overcome.

Dr. Hammond (St. Paul): Last week I had an opportunity to examine a young man on whom I had done a splenectomy six years ago. That was a trau-

matic spleen and he had been perfectly well up to that time. The blood picture now is very interesting. He was operated on January 23, 1921. He lost a great deal of blood and had a marked secondary anemia. On the 25th the blood picture was r.b.c. 3,500,000; w.b.c. 16,500; and Hb. 58 per cent. Late in February another count showed Hb. 45 per cent, r.b.c. 2,650,000; and he still had a marked leucocytosis of 12,000; polys. 68 per cent, large lymphos. 14 per cent, and small 18 per cent. Six years after (he is now 23 years old) he is a very healthy young man. His Hb. is 100 per cent; r.b.c. 4,600,000; w.b.c. 8,000; polys. 61 per cent; lymphos. 34 per cent; and eosin. 1.5 per cent. In 1923 he had several acute attacks of tonsillitis and had his tonsils removed and got along nicely. At present there is no glandular enlargement. Since then, also, he has been exposed pretty thoroughly to tuberculosis. He was married during this time and his wife died of tuberculosis. He seems to resist infection very well.

Dr. L. C. Bacon (St. Paul): I do not know that this case should be injected in a discussion of splenectomy except for the emphasis on splenectomy in hemorrhagic purpura and to mention the importance of diagnosis.

About two years ago a young woman came to me with all the symptoms of an advanced hemorrhagic purpura. The hemorrhagic blue-black spots had first appeared about three months before and had increased to an alarming degree. The accompanying exhaustion was marked and progressing. Hemorrhages of mucous membranes were frequent. I cannot give, offhand, the laboratory report of blood findings but remember that it did not give me grounds for determining the source of the trouble.

In this young woman's case there were definite pus tubes and their removal seemed indicated. After their removal the purpura cleared up rapidly and restoration to health was complete.

This case would indicate that focal infections should be searched for in these cases.

Dr. Judd: Dr. Sweetser asked about the cause of the adhesions. I cannot say what causes them, but I do know that they have been so extensive that we had to stop the operation without removal of the spleen on one or two occasions. It is possible that they result from splenitis or from pressure. I think Dr. Sweetser has been fortunate in not encountering one of these cases. He has something coming to him.

Dr. Giffin (in closing): We have been afraid to do any sort of operation on patients with hemophilia. The question of diagnosis is the most important one so far as splenectomy is concerned. In cases of hemophilia the platelet level, taken over a number of days, is within normal limits. In cases of hemorrhagic purpura, on the other hand, the platelet level on repeated counts is usually below 100,000.

With regard to the relationship of infection to hemorrhagic purpura, there is pretty good evidence that hemorrhagic purpura is due to an infection that localizes in the spleen. The spleens that have been removed may be said to show an acute splenitis. Before the days of splenectomy we attempted to remove all important foci of infection. Now, however, the spleen is removed and focal infection cleared up afterwards. A few cases in the literature seem to demonstrate that unless focal infection is eliminated, there is a slight tendency to recurrence of the features of the disease.

We have had no experience with splenectomy in acute fulminating purpura. There are two cases in the series in which the history was of only two months' duration; these patients did as well as the others. There are undoubtedly cases of purpura in which the features of coagulation are slightly different from those in thrombocytopenic purpura, and it is likely also that there are cases of such severe grade that no method of treatment will be effective.

There is no definite information as to just how removal of the spleen stimulates the bone marrow. It was thought at first that this might be compensatory to the anemia that results following experimental splenectomy, but the hyperplasia of the bone marrow seems to be more marked than would be necessary for this purpose, and persists for a much longer time than the anemia. A definite change in the size of the liver and in the function of the liver has been demonstrated in some of the cases of Banti's disease. The liver has become smaller, and the ascites which was present before splenectomy has disappeared. Functional tests on the liver have been done too recently to make it possible to have accumulated much evidence in this regard.

The spleen may be considered in its relationship to the liver, to the vascular system, and to the hematopoietic system. Both functionally and in the quantity of blood in the portal system, its relationship to the liver is shown. The recent work of Barcroft and his associates, which shows that blood is extruded from the spleen during exercise, indicates a function with respect to the total quantity of circulating blood. Its effect on the destruction of various blood cells and its anatomical structure as a lymphoid organ indicate its relationship to the hematopoietic system.

Dr. S. E. Sweitzer (Minneapolis) reported a case of paresis treated with malaria.

Wm. B., age 33, salesman, was admitted to the hospital on January 9, 1926. He gave a history of nervous breakdown five months previous. The patient had chancre four years ago (1921) and received active treatment with neosalvarsan and mercury for one year. Since his breakdown he has been unable to work. He has been unable to think or remember anything since this breakdown as is evidenced by the fact that he took his child downtown several days before admission and lost the child. During his first night in the hospital the patient became unmanageable and had to be restrained.

The physical findings were negative except for two plus hyperactive knee jerks, positive Babinski, and slight systolic murmur over the apex.

The blood Wassermann was positive. The red, white and differential counts were normal. The spinal fluid was clear, colorless, Nonne 1 plus, 20 cells per cu. mm.,

curve 2455521000. Spinal fluid Wassermann was positive.

The diagnosis was paresis.

Treatment: The patient was inoculated with 15 c.c. of citrated blood from a malaria patient on January 15, 1926, and began having chills January 20, 1926. Malaria was found on blood smear 1/25/26. Blood urea during the course of the treatment was 21.15 mg. per 100 c.c. of blood (two occasions 1/27/26 and on 2/1/26). The patient was allowed to have 12 chills and then the malaria was interrupted with quinin grs. v, t.i.d.

He was discharged on February 13, 1926, and his condition had improved markedly.

Follow-up history: Ot the present time the patient is working daily selling insurance. Since taking the treatment his appetite has increased and he has gained in weight. To date he has taken six neosalvarsan treatments since his malaria inoculation.

DISCUSSION

Dr. Sweitzer: I might say a few words about the modus operandi of the malaria treatment. It is interesting to speculate on how the malaria causes improvement in these cases. Dr. Schamberg, in Philadelphia, inoculated rabbits with syphilis and then put them in a hot bath for a short time. If left in the hot bath so their temperature went up to 104 degrees for an hour or more, syphilis was prevented. The elevation of temperature to a high point over a considerable number of hours probably does a great deal of good in this condition. Typhoid and other foreign proteins do not give such good results probably because they do not keep the temperature up high for a long enough time.

In Vienna they are treating all cases of syphilis with malaria, giving one course of neoarsphenamine; then malaria, and another course of neo, and possibly a course of bismuth.

Dr. E. S. Judd (Rochester) reported two cases as follows:

Case 1. Colloid carcinoma of the transverse colon, splenic flexure and omentum.

Case No. 552592, a widow, 65 years of age, came to the clinic on June 1, 1926, complaining of a mass in the left side of her abdomen which she had discovered six weeks previously. She had had practically no symptoms except a little dull pain at times. Though she had lost 58 pounds in the past year her appetite had grown poor only recently. She had had no trouble with her stomach and no bowel symptoms. Her family history was without indicative incident.

She was an undernourished elderly woman of somewhat anemic appearance. A large, movable, irregular mass occupied the entire left upper abdomen; the area was not tender, but was tympanous. Regional adenopathy was lacking. She had a 59 per cent hemoglobin, with 3,710,000 erythrocytes and 9,700 leucocytes. The blood Wassermann was negative and urinalysis was normal. The roentgenogram of the colon after a barium enema showed a large filling defect beginning at the splenic flexure and extending well across the transverse colon, suggesting an extensive lesion. A diagnosis of a left abdominal tumor, probably a carcinoma of the splenic flexure, was made and an exploration advised, but not urged.

On June 8, 1926, under local and ethylene anesthesia, the abdomen was opened through a left rectus incision. The mass proved to be a large colloid carcinoma of the transverse colon, splenic flexure and omentum, which had been matted together forming the tumor. However, this was the only sign of malignancy and the mass was movable and could be brought to the outside of the abdomen, so the stomach was dissected free from the transverse colon after ligating the vessels in the gastrocolic omentum without serious interference with the circulation. The left half of the transverse colon, splenic flexure, and the adherent matted omentum were then resected and the whole mass removed in one piece. Curved clamps were then applied to the cut ends of the bowel and these ends were left hanging outside of the abdomen as a modified Mikulicz operation. A small catheter was introduced into the proximal loop of the colon to relieve the obstruction. A large split rubber tube inserted for drainage was brought out through the left flank.

Postoperatively she was given morphin and subcutaneous saline administered for the first 48 hours, then water was taken by mouth, beginning gradually at first. On the fifth postoperative day the patient passed gas and fecal material through the catheter and was in good general condition. She left the hospital on the twenty-sixth postoperative day, and went home for six weeks. On her return August 20, 1926, we applied clamps preparatory to closure of the colostomy. She also had a moderate amount of nephritis. On September 6, 1926, the colostomy was closed under local anesthesia. She returned recently with a small persisting sinus in the left hypochondrium. In the interval she had gained considerable weight and has been entirely well in spite of the fact that she had a very extensive malignancy in June, 1926, when the first operation was performed. The colonic fistula was closed February 3, 1927. When dismissed she was having slight drainage from her wound. Her bowels were moving normally.

Comment: This case of colloid carcinoma of the transverse colon and splenic flexure is of interest because it illustrates a large group in which the malignant disease develops into a huge tumor and yet remains operable. Undoubtedly the malignancy was of low grade. The growth was easily separated and the entire malignant process removed en masse. It was not advisable to leave the mass on the outside of the abdomen as is done in the regular Mikulicz operation because it was too large a tumor. After the entire dissection had been completed clamps were placed on the colon and the growth removed, interfering as little as possible with the circulation to the mesocolon. We were not sure that the circulation in the limbs of the remaining colon was sufficient to allow healing so it did not seem advisable to attempt an immediate anastomosis and, instead, the clamps were left on the proxi-

mal and distal ends and about two inches of each loop were prolapsed through the abdominal wound. The abdominal wall was then closed quite snugly around these two pieces of bowel. In our experience this plan of modifying the Mikulicz operation has been extremely satisfactory and we use it frequently in just such cases as this, and in those in which the growth is ulcerating or where there is any question about the perforation of the tumor. When employing this procedure or the regular Mikulicz operation, it is a good plan to make a small opening in the proximal limb of the colon two or three inches above the growth or above the clamp and then pass a small catheter into the colon through this opening, establishing a catheter colostomy. If this is done it is not necessary to change the dressing or disturb things for a week or ten days as the catheter allows the gas and some feces to escape and prevents distention. This has been a most valuable adjunct in our cases.

Case 2. Malignant Polyp of the Cecum. A522295, J. J. C., presented himself for examination September 4, 1925. His family and marital histories were without significance. An appendectomy had been performed twenty-five years previously. He complained chiefly of pain in the right lower quadrant of the abdomen. The distress associated with much bloating and belching had been constantly present for 5 months. For the last month the pain had been colicky and severe and the gaseous distention had been more pronounced. During the past three months he had lost 11 pounds in weight.

Physical examination revealed no abnormality except a palpable and tender mass in the right lower quadrant just beneath the previous appendectomy scar. On close observation this mass seemed to momentarily increase in size and become extremely painful. His pulse was 78, temperature 100.6°, blood pressure—systolic 110, diastolic 78. Urinalysis was normal. A blood count showed the hemoglobin to be 73 per cent with 4,330,000 erythrocytes and 7,100 leucocytes. The blood Wassermann was negative.

On September 7, 1925, we operated, making a right rectus incision just to the inner side of the former appendiceal incision, which revealed a thick cecum with a good deal of retroperitoneal infiltration, which apparently composed the mass we had been previously able to palpate. The mass was dissected out and the cecum opened revealing a polyp about 3 cm. in diameter, springing from the region of the base of the appendix. That portion of the cecal wall from which the polyp arose was excised and the opening closed. On examination of the tissue, the pathologists reported an adenocarcinoma, grade 2 (according to the method of Broders). The patient made an uneventful immediate convalescence. Ten months later he returned to the clinic for a check-up of his condition and neither the *x*-ray nor palpation revealed any evidence of a local recurrence, although there was a soft enlarged gland in the left supraclavicular area, and we advised observation at frequent intervals.

Comment: Polypi may occur at any location within the gastro-intestinal tract. They appear as cauliflower-like growths projecting into the lumen of the gut, coarsely or finely lobulated, reddish or purplish in color, often ulcerated and covered with an inflammatory exudate. There may be a single polyp or multiple lesions scattered over a large area or at other times localized in a small segment of gut. Polyposis of the entire mucosa from cardia to anus has been observed by Hauser and Kaufman but their occurrence in the small intestine is comparatively infrequent. They are usually located in the large gut, most often in the rectum and sigmoid. They are not frequently found in the cecum. In a series of 119 benign growths of the entire intestinal tract collected by Gant, only 3 were located in this region. When growing in the cecum, they usually arise from the region of the ileocecal valve.

Congenital malformation of the intestinal wall which extends into the mucosa and submucosa has been offered as an explanation for their occurrence. Some believe it to be a familial disease. Ulcerative colitis is thought to bear a definite relationship to intestinal polyposis but as yet its origin has not been definitely determined.

There has been a striking tendency toward the development of malignancy in intestinal polyps. In a series of cases studied by Struthers, malignancy occurred in 32.22 per cent. Carcinomatous polypi in the small intestine are rare, the majority being found in the colon. Malignant changes occurring in solitary polyps are more often found in the rectum and sigmoid. In a review of the literature no mention could be found of malignant changes in polyps found in the cecum.

The symptoms resulting from intestinal polyps depend upon the extent and location of the involvement and the degree of obstruction that is produced. Constipation alternating with diarrhea and the passage of mucus and blood is not an infrequent occurrence. More or less vague abdominal discomfort may be present, associated with borborygmus and visible peristalsis. Digital and proctoscopic examination determine with certainty the existence of polyps within the rectum and sigmoid. Where the growth is higher up in the tract, an *x*-ray examination with a barium enema will aid in establishing a diagnosis. Very rarely do the polyps reach sufficient size to be palpated through the abdominal wall. Weight loss and the existence of a marked secondary anemia are most suggestive clinically of malignant changes.

Polyps situated low down in the rectum can be excised or cauterized without difficulty through the anus. When in the upper part of the rectum and growing from its posterior wall, an incision over the coccyx affords the best means of removal. While partial colectomy carries with it a grave risk, it likewise affords the only means of getting rid of extreme polyposis. The justification for such a procedure must be determined by the severity of the symptoms or the coexistence of malignancy. Single polyps situated in the colon or cecum are best removed by excising that portion of the wall of the gut from which the polyp arises. Single polyps that have undergone carcinomatous changes are usually of a low grade of malig-

nancy, are late in metastasizing, and can be safely removed by such a comparatively simple procedure.

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DISCUSSION

Dr. A. Schwyzer (St. Paul): The first case Dr. Judd reported, where he removed a part of the wall of the colon only, might be surprising to a good many; but malignancy of the large gut above the rectum is of such mild and slow-growing character that I think this was the motive for the doctor's procedure. In looking up my notes on carcinoma of the colon from the ileocecal valve to the sigmoid (inclusive) I was very agreeably surprised how many of these patients, comparatively speaking, have stayed well for long years. One case had taken massage of her colon for constipation for six months previous to the operation and was operated, therefore, after the tumor had advanced quite far. This lady had lost very much blood, the hemoglobin was reduced to 23 per cent. We transfused her and, leaving her on the operating table, resected immediately as we feared she would otherwise lose what blood we had given her. The operation was over ten years ago and the woman is well today. Another case died recently of a heart condition (I am told) fourteen years after resection of the transverse colon for carcinoma. There had been no signs of recurrence. Only in one case did we have a short lived improvement (9 months) and that was a case of carcinoma of the transverse colon where we had to go to the root of the mesocolon, because the lymphatics were involved and had formed bulky masses down to the pancreas. I use, and always have used, an end-to-end suture. Up to the right end of the transverse colon we always made an ileocolic resection. The union in these cases was also always end-to-end. The ileum is really invaginated by the suture into the colon for about an inch.

About three weeks ago I operated on a case of carcinoma of the stomach which had grown into the colon. We removed a little less than half of the stomach with the corresponding portion of the colon. I was quite careful not to interfere much with the circulation of the colon. I remember that Kocher had several cases where sloughing of the colon occurred in operations for carcinoma of the stomach where the growth had advanced into the mesocolon. In later days he therefore removed the adjoining portion of the colon to avoid this sloughing, and reports three cases where he did this and had no sloughing. The operation for our patient was on a Monday and the temperature remained normal till Saturday, when it reached 100. Friday morning he declared he felt fine. Saturday morning the pulse reached 100, while it had been in the sixties and seventies all the time before. Saturday evening the patient was dead. We made an autopsy. There was no trouble with the stomach sutures; not even a trace of fibrin was to be seen. The colon for about 2.5 inches from the suture line to the left was gangrenous, while from the right side up to the very suture line it was living. We had resected the mesocolon flush with the colon. There was no part of the colon at the suture line which was denuded of its mesocolon, nor had we resected the mesocolon to any depth; in fact, we had kept quite close to the gut. Nevertheless gangrene had set in on the left side of the suture line. From the appearance of the parts the perforation must have occurred probably Saturday morning. The neighboring peritoneum had had no time to throw out fibrin.

I then looked up the anomalies of the colon circulation. Testut, the French work on anatomy, and especially Henle's Anatomy, gave interesting information which could explain our case. Among the varieties of arterial supply of the colon I found two which interest us here. First, there occur cases where the right colic artery (or the middle colic artery if it exists) and the left colic do not anastomose macroscopically, while as you know there is normally an arterial arch between the right respectively, the middle colic artery, and the left colic, the former originating from the superior mesenteric, and the latter from the inferior. In the cases where there exists no such arterial anastomosis the greater portion of the transverse colon is supplied by the superior mesenteric artery and the resection being made in the right area of the transverse colon the left segment will have no circulation except what little capillary communication the left colic can furnish. This is apparently at times insufficient, especially in the presence of a suture line much exposed to infection. Kocher thought that it was infection which brought on the gangrene; but the fact that in our case the right side was not affected excludes this cause as the deciding one, though it may assist in causing sloughing.

There is a still more dangerous anomaly in some cases. There may be no inferior mesenteric artery at all. The superior, through its median colic branch, then supplies the blood for the descending colon and furnishes even the superior hemorrhoidal artery. Imagine the drama following an extensive resection of the transverse mesocolon under these conditions.

Even if the omentum is broadly grown to the colon up to the suture line, this furnishes not in the least a sufficient blood supply; in fact there exists only a moderate capillary connection.

But our case teaches us that even if the mesocolon is cut flush with the colon and the resection of the mesocolon is even quite shallow, there may nevertheless be sloughing on the left side if the direct arterial supply was deficient.

The meeting adjourned.

Carl B. Drake, M.D.
Secretary.

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

MALIGNANT THYMOMA*

Report of Case

Russell R. Noice, B.S., M.D.

Minneapolis

Malignancy of the thymus gland is apparently very rare. Dr. E. T. Bell[1] of the University of Minnesota collected in 1917 from the literature a series of seventy-three cases, in which group the number of sarcomas reported outnumbered the carcinomas in the ratio of about five to one. From 1920 to 1925 only four reports were listed in the Quarterly Cumulative Index of the American Medical Association.[2] The lymphatic tumors are far more numerous than the epithelial and occur mostly in persons under thirty-five years of age, generally in children.

As to the terminology to be employed in describing a malignant tumor of the thymus, there is much difference of opinion, as there is considerable uncertainty regarding the origin of the gland. Dr. I. A. Abt,[3] in a recent article, states the consensus of opinion favors the view that the thymus is an epithelial organ that eventually becomes infiltrated with lymphocytes. It is agreed that the reticulum of the thymus is formed from infolding epithelial tubes from the third branchial clefts.[4] There is much controversy, however, regarding the origin of the parenchyma cells. These cells have all the appearance of small lymphocytes, and, if such, must arise from the mesoderm and infiltrate the reticulum. In man, this lymphatic infiltration is supposed to begin during the second month of intrauterine life. The other view is that the parenchymic cells are developed from the cells of the reticulum by repeated division of the original epithelium.

Because of the obscurity of origin of these cells, the tumors arising from them have been variously named. If the parenchymal cells are epithelial in origin, their malignancies must be carcinomas; if true lymphocytes, sarcomas. However, the term malignant thymoma may be used and correctly covers the condition whether or not the cells in question are endodermal or mesodermal in origin.[5]

The symptoms to be expected in thymus tumor are those, of course, associated with pressure. Early in the disease there is cough and difficulty in breathing. The dyspnea may be very marked and pain in the chest is frequent. As the tumor grows, the vessels become compressed and venous congestion results with cyanosis. The *x*-ray should be of great value.

In the case I am reporting you will note a series of wrong diagnoses in the early stage of the disease—conclusive diagnosis only being made at autopsy, which was performed by Dr. O'Brien of the University of Minnesota.

In perusing the literature, however, and in reading many case histories of malignant thymomas, I find that the course of reasoning has been much the same. The diagnosis was generally arrived at after the death of the patient.

REPORT OF THE CASE

The patient, a boy aged 4, until the time of this illness, had always been well except for measles two years previous.

On December 11, 1922, I was called to see patient at his home, found the child in bed with a high fever (103.5) and a severe bronchial cough. Physical examination gave the usual signs of an acute bronchitis, together with a definite pleural friction rub in the left chest. The next day, over the telephone, I was told the patient was greatly improved. I did not see the patient again at this time, but was told later that after running a slight temperature for a few days, he had apparently made a complete recovery.

On January 6, 1923 (about four weeks later) the mother called me by telephone and reported that for the past week the child had been losing weight, did not care to play and had little appetite. I suggested they bring the child to my office.

This time I found a tired, listless child, pale and running a slight temperature (99.6). The respirations were slightly exaggerated, the alæ nasi moving with each breath.

Percussion gave a decided dullness over the entire left chest with normal resonance over the right side. The heart appeared pushed somewhat over to the right. Auscultation over the right chest was apparently normal, but on the left side the breath sounds were greatly diminished—in the lower left chest they were absent.

These physical signs, together with the past history, led me to think of a left pleural effusion. I informed the parents of my belief and advised an *x*-ray the following morning.

The *x*-ray diagnosis was left pleural effusion and the child was sent to the hospital. A leucocyte count at this time gave 16,600 leucocytes to the c.mm. of which thirty-two per cent were lymphocytes, 1 per cent large mononuclears, 1 per cent transitional, 65 per cent pmn's, 1 per cent basophils. Urine was negative. Under a light anesthesia of nitrous oxide I pierced the left chest wall in the post-axillary line at the eighth interspace, using a large calibre needle, but obtained no fluid.

Disappointed in the result, I called in consultation a pediatrician who, after a careful examination, confirmed my diagnosis, but suggested I attempt my aspiration in the anterior axillary line and higher up.

*Read before the Hennepin County Medical Society, March 16, 1927.

his I did, selecting successively the fifth, fourth, and ird interspaces and using the fluoroscope to guide e in keeping clear of the heart. But again I found o fluid. Consolidation of the left lung following an nresolved pneumonia was considered but practically led out on account of the past history. At this time e supraclavicular and right axillary glands were ightly palpable and a neoplasm was discussed. The on Pirquet test was negative.

The little chap, being lonely at the hospital, was re-rned home. He grew rapidly worse and suffered at mes from sharp attacks of pain in his chest. His spirations became more rapid and difficult, and he as running a temperature daily from 99.4 to 101.5.

On January 28th I held consultation with an intern-t, and under his direction an aspiration was done in e left midaxillary line at the sixth interspace and 250 c. of bloody fluid obtained. This fluid was negative micro-organisms. On February 4th it was decided to tablish drainage and surgical consultation was called . By this time the supraclavicular and right axillary ands were enlarging rapidly. A diagnosis of a rap-ly growing neoplasm appeared justified. The fol-wing day we established drainage by means of a ochar inserted in the sixth interspace in the anterior xillary line and obtained 500 c.c. of bloody fluid. A fferential count of w. b. c. gave 94 per cent lympho-ytes, 2 per cent plasma cells, 4 per cent pmn's, with organisms present.

The patient sank rapidly, had very severe attacks of recordial pain, greatly embarrassed breathing and died rom cardiac failure on February 7th, after approxi-ately five weeks of illness.

AUTOPSY REPORT

"The body is that of a moderately well developed, naciated, white male child weighing approximately 40 ounds. The abdomen is distended and tense. There a catheter inserted through a puncture wound in the xth interspace in the left anterior axillary line. The ft chest bulges, especially in the anterior direction. igor is present; hypostasis is purplish and posterior; ere is no edema or jaundice. The lips and nails are ightly cyanotic. The pupils are equal, regular in con-ur and dilated.

Autopsy is limited to a chest incision. When the ternum is lifted the under surface is adherent to a rge grayish yellow tumor mass occupying the an-rior mediastinum. This is dissected off without dif-culty. The left pleural cavity contains approximately 500 c.c. of cloudy yellowish brown fluid and a few akes of fibrin. The left lung is completely collapsed. The right lung is normal in size and position. The right pleural cavity is negative.

The presenting mass in the mediastinum extends from the sternal notch to the diaphragm. The edges are rounded and the surface is smooth except for the roughened anterior portion. It occupies a position corresponding to that of the thymus, of which no other evidence is found. It measures 10 x 13 x 5 cm. The tumor extends to the lower edge of the thyroid but does not show any connection with that gland. There are a large number of enlarged lymph nodes in the superior mediastinum, averaging approximately 5 mm. x 1 cm. They are present in discrete and cluster formation. The peribronchial nodes are involved. While the tumor has undoubtedly produced pressure effects on the great vessels and the trachea in the superior mediastinum, no definite encircling prolongations are found.

The heart is found beneath the tumor mass, occupying a mid position on the diaphragm, extending slightly more to the right. The contents of the thoracic cavity were removed en masse and preserved.

The liver is palpated through the lower edge of the incision and found to be normal in size and position. Sections removed for microscopic examination.

The kidneys are normal in size and position. Sections of the spleen taken; the organ appears normal.

The lymph nodes of the abdomen are not enlarged. The inguinal and cervical nodes are negative. Ten or twelve medium sized enlarged lymph nodes are found in the right axilla which do not appear to be involved.

Diagnoses.—

1. Malignant thymoma.
2. Acute serofibrinous pleuritis, left.
3. Left pulmonary atelectasis.
4. Paracentesis wound in left axillary line."

Comment.—From a clinical standpoint this was the most interesting case I have yet experienced in my practice. The history and clinical signs were most misleading and the *x*-ray plates only served to further obscure the diagnosis. If seen early and a diagnosis arrived at immediately, *x*-ray therapy would be the proper procedure, I believe.

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BOOK REVIEWS

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MANUAL OF GYNECOLOGY. John Osborn Polak, M.Sc., M.D., F.A.C.S. 3rd edition, revised. 402 pages. Illus. Cloth, $5.00. Philadelphia: Lea and Febiger, 1927.

OUTWITTING MIDDLE AGE. Carl Ramus, M.D., 269 pages. $2.00. New York: The Century Company.

This book is written by a surgeon in the United States Public Health Service, yet in middle age, so that it can not be misunderstood as an old man's attempt to disprove senility. It is a discussion and description of the conditions that bring about middle and old age, and the contributions of science toward the keeping of youth.

The author discusses the surgical operations of Steinach and Veronoff in slightly too favorable a manner and to the majority of medical readers he will seem to place too much emphasis upon the attitude of mind that anticipates old age. He also discusses the effects of gland therapy, drugs, diet, exercise and right living, upon the appearance of senility. He advises active elimination, consistent exercise, light diet with very little meat but a large amount of fresh fruit, a keen interest in life and feeling of youthfulness as the logical procedures toward keeping one's youth, with greatest emphasis upon a mental attitude which refuses to contemplate the subject of the advancing years. About exercise and elimination he says: "Aging is not so much a matter of years as of defective circulation. Sane physical exercise and simple food prevent constipation, favor elimination and maintain good circulation. That which maintains good circulation conserves youth. To a very large extent, then, a true elixir of life is thus available to everyone, man and woman." The idea of the whole book is given when he says: "If our bodies could be protected from the now definitely known causes of old age, improper diet, chronic constipation, certain chronic infectious diseases, poisonous and habit-forming drugs, sustained worry and fear, and negative fixations in the subconscious mind as to the inevitability of the climacteric and senility, our bodies would not grow senile and, barring accidents, should live on indefinitely in almost changeless youth, strength and beauty." He includes many historical cases of longevity and a long list of books on different ramifications of the subject.

The physician will find nothing new in the book and will read it with a certain amount of skepticism and a fixed conviction that there will always be "accidents" but he will find it a valuable book to refer to those of his patients who already see and dread the approach of senility. It gives, in a simple and clear manner, what is known about the prevention of old age by science; it advises all measures to be under the direction of a good physician; it urges frequent physical examinations and altogether will do much to revive hope in despairing hearts, and slightly dispel that fear which is second only to the fear of death, that of old age and the unpleasant sequelæ which usually accompany it. It is, therefore, a book for the laity built upon a scientific basis and will doubtless do its share in keeping contact between the medical profession and the general public.

MARGARET WARWICK, M.D.

REMINISCENCES. George Henry Fox, A.M., M.D. 8vo, pp. 248. $4.00. New York: Medical Life Press, 12 Mount Morris Park West, 1926.

Doctor Fox's preface begins: "These rambling reminiscences have been written and published mainly at the instigation of my son, Dr. Howard Fox, who has evidently concluded that reading them, whenever he might feel like doing so, would be far preferable to listening to their repetition." Now, when a man passes such judgment on his own biography, he is a *rara avis,* and your reviewer, for one, wants to read his book.

Unfortunately, the rest of it falls below this promise. It is no contribution to medical history; no Vesalius or Pasteur walks its pages; the action is slow; and no one would rise from it aboil with enthusiasm to great things.

But Fox pretends to no greatness, and tells his life-story simply. There is an occasional gentle flame, such as his picture of Hebra. Hebra, like his contemporary, Dr. Joseph Bell of Edinburgh—he who is said to have inspired the Sherlock Holmes of his student, Conan Doyle—had systematized "deductions" until in his hands snap diagnosis approximated certainty. "Taking the patient's hand in his and looking straight at the class he would say 'this man is a tailor' and we

soon found that he discovered this fact by feeling the needle pricks on the roughened forefinger. A hatter he would recognize by some peculiar callus on the ball of the thumb * * * ."

However minor the book is, it is justified by its author; for the friends of this genial, kindly gentleman, the dean of his branch of medicine in our country, are numerous enough to give it a large public.

JOHN FALLON, M.D.

GOITER AND OTHER DISEASES OF THE THYROID GLAND. Arnold S. Jackson, M.D. Price, $10.00. Paul B. Hoeber, New York, 1926.

This book consists of some three hundred odd pages, the paper of very fine quality and the print excellent.

The book is divided up into twenty-one chapters. The first chapter is devoted to a review of the anatomy, embryology, histology, physiology and chemistry of the thyroid gland. It is a very fitting chapter for opening the book and covers the subject thoroughly and is entirely devoid of cumbersome details.

The following two chapters cover well to date the relationship between the thyroid and other ductless glands and also give a brief historical review of goiter. This is an intensely interesting chapter. A short space is devoted to the distribution of goiter and statistics of more than ordinary interest are given here. Etiology is discussed briefly in the following chapter.

An excellent chapter is devoted to the classification of goiter. This classification is brief and to date is the one most universally accepted.

One chapter is devoted to malignancy, tuberculosis, lues, etc., of thyroid. Except for the first mentioned it appears that the others are indeed very infrequent, with lues of the thyroid *per se* probably not existing.

A splendid chapter is devoted to diagnosis and treatment of myxedema and cretinism. A very fine differential diagnosis is given. It seems that myxedema receives little attention in general practice and while we know that hyperthyroidism is missed often enough, being treated frequently as cardiac cases, myxedema probably is more often missed, especially the mild types.

The chapter on iodin and its use in treatment of goiters is a chapter of great interest to the general practitioner as well as to the internist and surgeon. The author describes clearly the dangers of its administration as well as its value in judicious use. Many interesting statistics are contained therein.

Another chapter emphasizes the value of basal metabolism readings and gives a discussion as to why its value is often underestimated.

Medical treatment of goiter is well covered, as is also the "heart in toxic goiter." The author has a very excellent chapter on the importance of preoperative examination of goiters and preoperative and postoperative care. These chapters alone more than repay the cost of the book.

A chapter is devoted to operative complications and postoperative complications of toxic goiter and treatment for these conditions. This chapter of course interests the surgeon mostly. The book is closed with a chapter on mortality factors and postoperative results in goiter surgery.

This book, the number of pages of which would suggest a bulky and detailed work, is quite the contrary. There is no space devoted to hashing and rehashing. Each chapter is a little story in itself, and collectively the chapters make a most complete and up to date work on goiter. Salient points are forcefully depicted, and all in all the book makes extremely easy and delightful reading. Every physician and surgeon could well afford to read this book.

J. M. SPRAFKA, M.D.

HAY FEVER AND ASTHMA. A Handbook for the Patient. Ray M. Balyeat, A.M., M.D., Instructor in Medicine in the University of Oklahoma Medical School; etc. 190 pages. Illus. Philadelphia: F. A. Davis Company, 1926.

A patient suffering from almost any chronic ailment may now find a book written for the layman devoted to the particular disease with which he is stricken. Thus the tuberculous patient, the individual with hypertension, the neurotic and now the asthma and hay-fever sufferer may read the finer details of his disease and more clearly understand the exact nature of his condition.

The writer of this small volume attempts in simple terms to explain the chief causes of these diseases and to outline a routine of management. The mechanism of sensitization is described and the large variety of substances which may cause hay-fever and asthma is discussed rather fully.

There is considerable valuable information in this book, for the physician chiefly, but aside from a few helpful hints there is very little which would be of any great value to the hay-fever and asthma sufferer. The intelligent physician could include in a page or two of typewritten directions all that is contained in this book which would be of practical value to the patient. A large number of case histories is also included, which does not seem to have a place in a volume written essentially for the patient.

M. H. NATHANSON, M.D.

DEFECTIVE MEMORY, ABSENT-MINDEDNESS AND THEIR TREATMENT. Arnold Lorand, M.D., Carlsbad, Czecho-Slovakia. 327 pp. Price, $3.00. Philadelphia: F. A. Davis Company, 1926.

With tremendous effort, Dr. Lorand attempts in many pages of verbosity to remember what he wishes to say about defective memory. The result is a hodge-podge of half-formed theories deduced from what he thinks others have thought, interspersed with such truisms as, "Only those things can find an entrance into our understanding that come through the senses."

One page is as good as another, and to quote a paragraph is to quote the book. Reading at random, one finds: "I have previously shown the favorable action of snuff, through which large quantites of nasal secretion and fluid are discharged and thereby the

quantity of blood circulating in the brain diminished. In this way snuff may exert a favorable influence on mental activity."

Everything affecting the physical health of the patient is considered as being the cause of poor memory. Insulin is suggested as useful in diabetes and everything under the sun as a relief for high blood pressure.

Two other books have been written by this author, "Old Age Deferred" and "Rejuvenation." Of these he modestly laments, "I take it for granted that the good results I have obtained in the treatment of old age have not become generally known, for otherwise I should be unable to understand why people give preferance to the sanguinary operation with its attendant risks and do not first try the medical treatment that gives similar results!" This treatment consists of ovarian extracts, thryoid, mud baths, iron, arsenic and ultra-violet rays. All of which add to good memory!

One feels that forgetfulness is an asset if there is any danger of remembering Lorand's work.

R. S. Ahrens, M.D.

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SPLENDID SUITE OF OFFICES for physician and dentist available July first, Bruess Building, corner Rice and Jessamine Streets, St. Paul, occupied by physician for past fifteen years. For particulars write Charles F. Bruess, 1110 Rice Street, St. Paul, or telephone Humboldt 1703.

FOR RENT—Office space for physician in new brick building just completed. Rental during summer months, $20.00; winter months, 25.00. Address George Zubcck, 1901 44th Avenue North, Minneapolis, Minn.

MINNESOTA MEDICINE

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SURGICAL TREATMENT OF TOXIC GOITER*

A. Schwyzer, M.D.
St. Paul

The surgical treatment of toxic goiter differs from that of the ordinary non-toxic in several ways. First, the indications for operation are quite different, and, secondly, the dangers of the operation lie mainly in other directions, while the technic of itself is more or less the same.

As to the indications for operation, we must remember that toxic symptoms can occur in any form of thyroid, even in malignant ones. A large colloid goiter may become toxic secondarily. After it has existed for years as an inert, or at least apparently inert, goiter, toxic symptoms become gradually quite marked and even exophthalmos develops. In such a case the goiter as a mass compressing the trachea or as an unsightly disfiguration of the neck, or damaging the recurrent laryngeal nerves or even as a substernal or intrathoracic tumor, may add to the desirability or necessity of surgical interference. While the thyroid which develops primarily into a toxic exophthalmic condition was called by Kocher *Struma Basedowiana,* the thyroid which, after having reached an outspoken inert goitrous enlargement and having existed for perhaps many years, now becomes secondarily toxic with protrusion of the eyes, was called *Struma Basedowificata.* An inert pre-existing goiter thus may become toxic at a later date. The indications for operation are in this case of course doubly strong, as the patient must be relieved from the toxicity as well as from the mechanical disturbance.

We divide nowadays the toxic forms mainly into two groups, the non-exophthalmic forms, most frequently caused by an adenomatous goiter, and the classical exophthalmic goiter. The rigid adherence to this differentiation of the toxic goiters does not seem justified. One will observe non-adenomatous diffusely enlarged goiters of very toxic character without exophthalmos, as well as on the other side exophthalmic goiters with multiple nodes. This latter form is seen most frequently in countries with numerous and large endemic goiters. The toxic parts in the gland in these latter forms may be between the colloid nodes, a fact which the surgeon must have in his mind. Time does not allow me to follow this line of thought much longer, but an *a priori* reasoning tells you that the more a node is colloid the more it is inert and the less it can be toxic. The toxic adenoma is something quite different from degenerating and dilapidating colloid nodes, which should not be called adenomata, but rather foci of (secondary) colloid degeneration. These latter do not have a clear-cut capsule.

In great contradistinction to these nodular areas of colloid degeneration is the true adenoma of active growth. It is very cellular and grows within itself. It starts somewhere in the parenchyma, which is then gradually pushed away and becomes thus compressed and stretched out. The stroma in this surrounding parenchyma remains and forms a capsule for the adenoma, from which it is readily shelled out, while the epithelial elements disappear more or less completely. This active adenoma was recognized by the analytical mind of Plummer to be at the bottom of the bulk of the toxic non-exophthalmic goiters. The surgeon should remember therefore that in these cases it is the adenoma itself which causes the toxic symptoms, while in a colloid goiter which becomes toxic later, it is mostly the remaining thyroid tissue between the colloid nodes which is the source of the toxic phenomena. He can remove these colloid nodes with far advanced degeneration to his heart's content, as long as he leaves some functioning parenchyma near the capsule and especially at the upper horn.

The signs of toxicity are an abnormally active circulation in the gland, which announces itself by a buzzing and whirring under the stethoscope

*Read in Symposium before the Ramsey County Medical Society, St. Paul, March 28, 1927.

and an arterial thrill to the palpating finger, especially over the superior thyroid vessels. The gland as a whole is very much more vascular than the normal gland, and expands on pulsation in toto.

For the surgeon it is of prime importance to know the degree of toxicity with which he has to deal. Fortunately we have good indicators. The pulse rate is a most valuable means to judge the gravity of the case. If it is 120 at complete rest, it will shoot up way beyond 140 and 160 as soon as physical exertion or especially psychic excitement is added. The degree of tremor is also important; but the most accurate measurement of the degree of toxicity is given us by the examination of the rate of basal metabolism. From plus 15 on, the rate is considered abnormal; but it would seem that in the presence of a very small thyroid and no marked clinical symptoms except an outspoken nervousness one should not be too prompt with the advice of surgical measures. We have only once operated for toxic symptoms with a metabolism of less than 20; and then only because (without the administration of iodin) the metabolism remained around 18 or 20 at long intervals and in the meantime no improvement could be reached by medication.

Let us hope that soon simpler and non-surgical measures will be found to cure these cases. Iodin will of course very probably bring the metabolism down, but as this is not curative and gives only a temporary improvement, we never use it except in the preparation of the patient for operation. In a case of doubtful indication for operation it will blur the issue and, what is more important, it is liable to do harm if given for any greater length of time. The thyroid in a susceptible case inclined to hyperthyroidism may become stimulated by protracted iodin treatment and what is termed iodin-thyroidism results. If the case then becomes surgical, one cannot use iodin in its preparation, and the one means which has improved the operative results wonderfully is unavailable. It is necessary to warn against the promiscuous use of iodin in toxic goiters. I would much rather operate on a severe case of exophthalmic goiter which I can prepare for from 3 to 5 or 7 days in the hospital with rest in bed and a sign "no visitors" on the door and 15 drops of Lugol's solution three times a day, than on a case which does not look as severe but has had iodin for weeks.

Hyperthyroidism in an outspoken form is a surgical disease. And although some of my internal colleagues will take issue with this statement, let me say that if one wants to do the right thing in a marked toxic goiter the case ought to be handled from the beginning by, or at least in conjunction with, the prospective surgeon, who will be anxious to watch closely the change in the metabolic rate under a short but energetic iodin administration. I dread the cases that have had iodin for weeks without control of their metabolic rate. As soon as a marked drop occurs in the rate after a few days of iodin treatment, in other words, when the condition has definitely entered into a decreasing phase, we may operate radically even with a metabolic rate which would have been prohibitive before we knew of the preparatory iodin treatment of these patients. With this temporary drop in the rate we have repeatedly performed thyroidectomy though the metabolism was still plus 60 or 70 or more.

But as much as the death rate from hyperthyroidism has fallen on account of this splendid improvement in the preparation of the patient for operation, we still have to face very critical situations. For example, in one case we had to do a thyroidectomy in the presence of a metabolic rate of plus 125. It was a recurrent toxic goiter. I am not sure that this case would not have been lost without the help of iodin administration. In another very recent case the pulse went up to 186 on the operating table and stayed there during the operation. It was a woman who had shown great variability in her pulse rate, and further delay seemed of no benefit. Even in the narcosis, which was however very light, the inner excitement kept on, and a rapid radical operation seemed to give the best chance. It was a non-exophthalmic case, and iodin, tried in small doses before operation, did not appear to act well. Our hope rested on two observed facts: (1) the metabolic rate had come down from plus 53 to 40.5 and (2) the pulse under complete rest had been within reasonable limits (90 to 110). Nevertheless this was an extreme limit to which to go, and only the fact that prolonged pre-operative treatment had not yielded a better state of affairs could justify active procedure.

Crile's anoci-association would have been best in this case. It was followed in an imperfect way only. To do it to perfection the whole hospital staff has to be especially trained.

In toxic adenoma iodin is not advocated and has the tendency to aggravate the toxic symptoms. This also, I find, is not always the case. If it is used in an atypical case, it must be tried with the utmost care. Unfortunately a simple ligation of one or more thyroid arteries does no good in these forms either, and is very liable to make things worse. In an extreme case of exophthalmic goiter ligation has its place, but since we know of the wonderful effect of the preparatory iodin administration under the control of the metabolic rate, ligation has become a very rare procedure with us. In 1904 I published my first five cases of operation for Graves' disease. Four of these were treated by ligation of three thyroid arteries only. While all had good primary results, one of them later did not seem to do well, moved to Colorado and was lost sight of. Two which were ligated and the resected case remained well for many years as we had news from them; in fact one of the ligated ones in which the operation dates back twenty-nine years was reported not long ago as well. Another ligated case, my first one, operated upon in 1896, with extreme exophthalmos, was well, though never very robust, for twenty-three years, then all at once became acutely toxic again with the heart running wild. We performed a thyroidectomy, but the patient died of hyperthyroidism. It was before the introduction of the preparatory iodin treatment.

As to the technic we can be brief. It does not differ materially from the operation for ordinary non-toxic goiters. In the ligation operation the upper thyroid arteries are usually selected or the whole upper pole is tied off. If the incisions are exactly in the line of the natural skin folds and if they are closed by subcuticular fine catgut or skin clips which are removed and replaced by a strip of collodion gauze after forty-eight hours, the scars will be very little visible. One may make a low collar incision, especially if the operation is done under an anesthetic, and from here ligate both upper poles. At the time of the thyroidectomy later on one can then use the same place for the skin incision and thus avoid multiple scars.

For the thyroidectomy local anesthesia (with a previous hypodermic of one-sixth or one-quarter grain of morphine) is chosen by us in those cases where the thought of operation does not excite the patient too much; but even here it is often better to give a little gas during the luxation of the goiter. Ether is to be avoided if possible. However, in case of marked nausea from novocain it is perhaps not widely enough known that a few whiffs of ether act as a specific antidote. Dexterity and experience are of course important, but rapidity should not be at the expense of undue loss of blood or at the sacrifice of carefulness.

While in large colloid goiters we must think constantly of leaving a sufficient amount of reasonably normal thyroid tissue, one can go very far in the resection of toxic goiters as long as one leaves a little tissue at the upper poles and the posterior capsule to protect the parathyroids. Even very small remnants consisting of one-sixth or even one-tenth of the gland are here sufficient; in fact the promptness and completeness of the cure are in direct proportion with the extent of the resection. I have never removed too much, but several times not quite enough. In non-toxic goiters one can quite often get along with a simple median vertical splitting of the fascia, but in the toxic forms we prefer to add as a rule a horizontal cutting of fascia and muscles in the upper wound area. This allows us to handle the gland with greater gentleness. An increased firmness and dryness of the loose connective tissue directly surrounding the goiter, this dry perithyroiditis is characteristic of the toxic cases. At times when the goiter is freed with the finger, one can hear a noise as if made by crumpling of fine tissue paper. The gland itself is felt as hard and somewhat rigid. It is friable and breaks readily on grasping with an artery forceps. The vascularity is not only great but the vessels are rather frail.

In our work we had always more respect for the lateral veins than some surgeons think necessary. An absolutely dry field in laying the goiter free allows one to recognize the structures properly. Most all the books on anatomy give transverse sections of the neck in which the deeper fascia envelops the sterno-hyoid and sterno-thyroid muscles thoroughly. This fascia is well developed over the outer surface of these

muscles but posteriorly you will mostly find very little of it. The sterno-thyroid muscle is so flatly spread over the goitrous gland that it has to be freed very carefully from the thyroid; otherwise one always leaves a few bundles of muscle fibres and loses the proper line of cleavage, which results in a blurred picture of the anatomy. For those who are not outstandingly dexterous (and among them I find myself) it is perhaps the neatest procedure to first free the goiter on both sides rather thoroughly and to make sure of the location of the trachea before one begins with the resection of the gland. In this way one is more sure of remaining master of the situation, should bleeding or choking become serious.

In a case where the lobes are pretty well separated or where the isthmus is not particularly bulky, and where the condition of the patient appears too grave for a complete resection, one may resect one side only. While this becomes necessary at times in an extreme case of large colloid goiter with dyspnea as a conspicious feature, I have never made a two-step hemithyroidectomy in toxic goiters if my memory serves me right. But perhaps in some cases it would have been better had I made the resection in two steps.

For the hemostasis of the remaining portion of the thyroid a running catgut suture is very satisfactory. The separate ligation of the inferior thyroid artery seems very rarely done in this country. The larger vessels, arteries and veins, are secured by one or two lock stitches around the outer side of the artery clamps which hold them. Thus as a rule not even the superior arteries are tied separately. After firmly securing with the lock stitch it is good policy to pierce the vessel with the running suture to keep it from slipping away. When the suture is finished, the patient is ordered to cough, or if he was under a general anesthetic he is allowed to come to enough so that he strains. Any bleeding is carefully taken care of. On straining, the central ends of the veins may bleed if they were not well secured before.

In our 675 goiter operations for all kinds of goiter we never had to leave clamps nor were we forced to re-open the wound to look for an active hemorrhage, but in goiter surgery one is at times walking on thin ice and the morrow may bring sorrow to the surgeon.

We had eleven deaths in our goiter work, including malignant, stenosing and intrathoracic cases, a mortality of 1.63 per cent. What then were the causes of death? In one case of an enormous non-toxic goiter, softening and collapse of the trachea had forced us to use intubation after the patient was returned to her bed. The tube had to be left in the trachea for several days, as removal was always followed promptly by alarming dyspnea. A bronchoblennorrhea set in, which the greatly run down patient was not strong enough to cope with. All the other ten deaths were from hyperthyroidism, every one dating back to the days before Plummer had given us the preparatory iodin treatment under the control of the metabolic rate. In our last 218 goiter operations performed in the last three and a half years, there was no mortality. Among them were 143 toxic goiters and among these there were only four ligations and no other two-step operations.

POISONOUS EFFECTS OF OXYGEN

In animal experiments a concentration of oxygen of more than 70 per cent of one atmosphere may produce symptoms of oxygen want. The manifestations are drowsiness, anorexia, loss of weight, dyspnea, cyanosis and, finally, death. Postmortem examination showed that diffuse hemorrhagic edema had developed, with such injury to the diffusion membrane of the lung that, in spite of the increased head of pressure, the arterial blood remained unsaturated. With this knowledge of the effects of overrich oxygen mixtures, oxygen may be used to greater advantage therapeutically. (Jour. A. M. A., May 14, 1927, p. 1570.)

INJECTION TREATMENT OF VARICOSE VEINS

In the face of growing enthusiasm for the treatment by injection of varicose veins of the leg and hemorrhoids, it is well to consider a recent report of a death after injection treatment of varicose veins. A man, aged 60, who had dilated veins of the left leg, was treated at short intervals with five injections of a 20 per cent sodium chloride solution. Serious symptoms developed, but the patient overcame these. However, about one month after the injection treatment he died suddenly of embolism of the pulmonary artery. One case proves nothing, but one disaster is an indication for caution. (Jour. A. M. A., May 14, 1927, p. 1571.)

DIAGNOSIS AND MEDICAL TREATMENT OF TOXIC GOITER*

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There are two forms of toxic goiter—toxic adenoma and exophthalmic goiter. Toxic adenoma is always preceded by a simple adenoma. Exophthalmic goiter is a disease of young people while toxic adenoma begins to show symptoms at about the age of thirty-eight. A toxic adenoma may be mixed type, containing areas of hyperplasia as well as the adenoma. When this is understood, one can see why a patient with a toxic adenoma will improve, temporarily at least, under Lugol's solution.

The diagnosis of toxic goiter is very simple if the prominent symptoms are present. A patient with a goiter who is nervous and has palpitation on exertion has a toxic goiter. Then in addition, if there is a history of sweating easily with fatigue and sleeplessness along with an increase of the basal metabolism, the diagnosis is complete. Sweating suggests a hyperfunction of the thyroid gland more often to me than any other symptom. While the diagnosis of the striking cases seems so easy, we must not forget it is very easy to overlook a large substernal goiter unless one is examining the patient especially for this condition. While I was writing this article, I operated upon a goiter that showed quite a large mass on the right side and in the region of the isthmus. Before operation I thought this was the full extent of the goiter, but when I removed the large right lobe and the isthmus, I then found to my surprise on the left side a broad left lobe extending well down below the sternum which was not palpable before the operation.

The milder forms of toxic goiter are much more difficult to diagnose than the more severe cases. Last summer while I was working over the diagnosis of what later proved to be a case of toxic adenoma, I met Dr. Eugene Riggs and he said, "Doctor, I have learned more medicine in the last month than ever before in my life, in the same length of time." Then he went on to tell me that some of these cases that he had been treating for neurasthenia, with palpitation, restlessness, insomnia, etc., were cases of toxic goiter. He now feels that he is going to be able to clear up some of these indefinite cases where formerly he failed.

The case that was uppermost in my mind when I talked to Dr. Riggs has been under my observation off and on for ten years. I first saw him with a tuberculous epididymitis and later with an auricular fibrillation. We then found that he had some badly abscessed teeth. After these were removed, with rest and digitalis, he was well again. His last illness began with attacks of restlessness, and melancholia. He slept well but was unable to concentrate on his work. If he was at home he wanted company—anything for excitement. His heart was irregular, rapid, and somewhat enlarged. He complained of being hot in the house when the rest of the family were comfortable or cold. He complained of sweating easily. There was a slightly palpable thyroid gland which at first we overlooked. He entered the hospital with a diagnosis of chronic myocarditis. The first night in the hospital he did not sleep, although he had received luminal and veronal. He said that he was so depressed that he thought of jumping out of the window. Then we thought we might be dealing with a psychosis. His basal metabolism was plus 56. After he was in the hospital for two months with Lugol's solution off and on, we operated upon him and found a small adenoma. His recovery has been gradual, for he is still nervous. Four months after the operation his basal metabolism was plus 11. His nervous system is improving rapidly.

Goetsch feels that many patients who are considered border-line nervous cases with symptoms greatly resembling mild hyperthyroidism, with asthenia, psychasthenia, incipient tuberculosis, etc., are actually suffering from a true thyroid disorder amenable to thyroid surgery.

I asked Dr. E. Mendelssohn Jones what he considered the most important thing in the surgery of a toxic goiter, and he said the pre-operative medical care. I can subscribe to this opinion completely. Once the patient is properly prepared, the operation is usually not very difficult. I have in mind now a case of a little girl about fourteen years old. The diagnosis of exophthalmic goiter could be made at a glance because

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she had a rather prominent goiter with extreme exophthalmos. We put her to bed but she could retain no food, not even water. She had been having a diarrhea for a few days. The pulse was very rapid, and she was very weak. Ten drops of Lugol's solution three times a day stopped the vomiting. The diarrhea was soon under control. It took about two weeks before she was in shape to be operated upon. The basal metabolism was plus sixty. This girl stood the operation well and went home in one week.

Charles Lyman Greene taught me that the deodorized tincture of opium in doses from fifteen to thirty drops three times a day was the best thing to quiet down an irritable heart. We use that as a routine now in toxic goiters. Ice to the heart and head quiets these patients and is very beneficial.

The basal metabolism is not always a reliable index because it may be normal. Strouse and Binsuanger in the Journal of the American Medical Association, January 1927, have reported a small series of cases of what they call the symptom complex resembling hyperthyroidism without increased metabolism. They say that the clinical picture presented by these patients was similar to, if not identical with, the syndrome long known and described by various authors under the names of irritable heart, effort syndrome, neurocirculatory asthenia, etc. They say all these patients have small goiters and a normal metabolism. They used iodine therapy and the patients were benefited or cured.

Since Plummer came out with his work on iodine insufficiency we have been giving Lugol's solution to all adolescent goiters. We give Lugol's solution in small doses of ten drops a day every other week. We have not had a case that did not react to this treatment, and if this continues it may change the goiter problem completely in the future. The other class of cases that show slight symptoms of Graves' disease, also react wonderfully well to the compound solution of iodine. Many times the goiter disappears entirely, and the heart rate comes down to normal, and the patients say they feel perfectly well. We are now less afraid of Lugol's solution and are giving it in larger doses but watching the patients carefully.

Dr. Noble Wiley Jones of Portland, Oregon, reports three cases of rapid heart and nervousness with a normal basal metabolism where the superior thyroid arteries were ligated and a portion of the gland removed with a complete cure of the heart condition. This is really an exploration of the thyroid gland. Dr. Robert Earl reports a similar case where the patient was in the hospital three months before the operation was performed. This patient was operated upon, the superior thyroid arteries being ligated, with complete cure.

In toxic goiter the heart is more seriously involved than any other organ in the body. There is degeneration of the liver, the brain, the kidney, and certain organs of internal secretion, but the heart suffers the most. The heart in a patient with a toxic adenoma shows a myocardial degeneration. In the late stages the heart is often irregular and enlarged. The prognosis in these cases depends almost entirely upon the heart. We are not so much concerned about left-sided enlargement of the heart as we are of right-sided hypertrophy. Kovach taught us that dullness beyond the middle of the sternum to the right showed right heart enlargement. It is the right heart that determines what a patient will stand in operative interference. Once the right heart is enlarged it never returns to normal.

Grant is authority for the statement that it occasionally happens that patients are treated for heart disease for a considerable length of time before it is discovered that a goiter is the cause of the cardiac symptoms. Bartlett says that a history of tachycardia on excitement should suggest hyperthyroidism because the other clinical symptoms may be lacking on examination. He also states that an increase of pulse pressure is pathognomonic of exophthalmic goiter.

Since Plummer has introduced the iodine treatment of exophthalmic goiter, I have not had a case where we had to do a preliminary ligation. In Rochester they do only one ligation now where they did one hundred before they started to use Lugol's solution.

If two selective operations have to be done on the same patient and one is for goiter, do the goiter first.

In the light of what we now know of focal infection, it should not be necessary to emphasize the fact that all foci of infection should be removed in goiter patients. In Rochester they do the major operation first and remove the foci of infection later.

In Bartlett's clinic there are to be no operative procedures under these conditions: (1) Mental derangement; (2) loss of weight; (3) extreme restlessness; (4) cardiac decompensation; (5) metabolic rate very high; (6) vomiting; (7) diarrhea.

PRE-OPERATIVE MEDICAL CARE

Patients with exophthalmic goiter or toxic adenoma may be prepared at home, but most cases do better in a hospital. Very often these patients do better in a ward than they do in a private room. We keep them absolutely quiet in bed. The first basal metabolism is not taken till the second day. From the beginning we give one and one-half grains of sodium luminal by hypodermic t.i.d. with five grains of veronal at night. Fifteen drops of Lugol's solution is given in milk three times a day. In very toxic cases the element of time is very important, but in ten days we should have the maximum benefit of the Lugol's solution. As much as thirty to forty drops of Lugol's solution can be given three times a day. Bartlett gives his patients four doses of veronal, five grains at a time every six hours, starting at noon the day before the operation. He gives no morphine before the operation if he is going to use ethylene, but he does give one one hundred and fiftieth of a grain of atropin sulphate three-fourths of an hour before the operation. In this way he says the patient takes very much less gas and novocaine.

If a patient is taken to the operating room and seems nervous and excited, do not operate that day. Later the patient may be perfectly reconciled to the operation and show no evidence of nervousness.

EFFECTS OF CINCHOPHEN

Cinchophen is not directly depressant to the heart muscle. The circulatory collapse produced by the toxic doses is due to effect on the vagus and vasomotor centers. It occasionally produces local irritation in the digestive tract, as indicated by anorexia, nausea, and other digestive disturbance. There may be scarlatiniform, urticarial or purpural skin eruptions, and edema with fever. In large doses it may produce albuminuria, though less so than salicylate. The administration of sodium bicarbonate is believed to lessen gastric irritation. A liberal amount of water should always be given along with cinchophen. The use of neocinchophen obviates the gastric irritation and lessens the possibility of toxic effects. (Jour. A. M. A., May 14, 1927, p. 1586).

THE PATHOLOGY OF TOXIC GOITER*

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Toxic goiter, from a pathologic point of view, is divided into two classes, the exophthalmic goiter and the toxic adenoma. The exophthalmic goiter is the thyroid gland which is slightly or moderately but rarely markedly enlarged. It is usually symmetrical in shape, pale in color, very firm in consistency with a "fleshy" or "meaty" appearance. It is homongeneous throughout with no cysts or adenomata but occasionally it is divided into segments by delicate fibrous septa. The microscopic sections show it to consist of acini lined by high, columnar, deeply staining epithelium which is thrown into papillary-like folds projecting into the lumina, which contain no colloid. At various points throughout the gland there are accumulations or foci of lymphocytes. In addition to these hyperplastic acini there may or may not be other acini which are filled with colloid and lined by low cuboidal epithelium, but these are never as numerous as the other type. Such is the typical picture of an exophthalmic goiter but great variations are seen. The degree of hyperplasia in the gland is not at all analogous to the severity of the clinical symptoms. Many thyroids removed from patients with high metabolic rates and severe, typical symptoms show much less marked hyperplasia than glands from cases with lower rates and much less pronounced clinical symptoms.

Iodine therapy greatly changes the appearance of the gland, so, since iodine is so generally used at the present time, the goiters which are now being removed by the surgeon show a much less typical picture of hyperplasia than those formerly examined. The administration of iodine tends to bring the hyperplastic thyroid back to the resting stage with many more acini lined with low cuboidal epithelium and filled with a colloid. The hyperplastic acini are much less numerous and tend to be arranged in small groups instead of diffusely arranged throughout the gland. The papillary projections are much less prominent, often being represented only by small projections on the walls of the acini. So different is the picture that in many cases that

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have been typical exophthalmic goiters before the iodine was given, a diagnosis of exophthalmic goiter can not be made from the morphology alone.

The toxic adenomata consist of circumscribed areas in the substance of the gland, rarely on the surface, surrounded by a capsule of dense fibrous tissue and containing a center of soft, pale, moist tissue. They may be either single or multiple, large or small, solid or cystic, discolored by extravasated blood or containing deposits of calcareous salts. Microscopic sections show them to consist of two types, the so-called "fetal adenomata" and the colloid adenomata. The former consist of very small acini which are often merely cords of cells with no visible lumina, packed closely together. The other shows small, round acini, filled with colloid and lined by low epithelium although occasionally the epithelium may be higher and resembles more closely the hyperplastic type. The acini are separated, more or less widely, by loose connective or myxomatous tissue. At times these two forms are mixed to form one adenoma and blocks taken from different sections of the growth show different pictures. Some of these adenomata cause clinical toxic symptoms while others do not. With the present facilities at our disposal we are not able to differentiate the toxic from the non-toxic adenoma by a pathologic examination and the differentiation must be made upon purely clinical findings. Those showing more pronounced hyperplasia do not prove to be more toxic than those of the fetal or simple colloid type. These adenomata cause a distortion of the gland and are often present in glands which are greatly enlarged. They are practically never found in goiters of the exophthalmic type.

URISEPTIN

An examination of uriseptin made in the A. M. A. Chemical Laboratory was published in 1908. The report brought out that while uriseptin was claimed to contain formaldehyde combined with lithium in the presence of a concentrated extract of corn silk and couch grass, the examination showed that uriseptin was marketed under a deliberately false claim, in that it did not contain the lithium formaldehyde compound, but instead contained hexamethylenamine (methanamine) as its chief constituent, and also lithium benzoate. (Jour. A. M. A. April 30, 1927, p. 1438.)

SURGERY IN GASTRIC ULCER*

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Ulceration of the stomach, or, better, gastric ulcer, has been treated clinically for several generations; yet it is within the past two decades that the vast majority of observations both medical and surgical have occurred. There are numerous reasons for the relatively recent attention directed to the diagnosis and treatment of all gastric diseases, the chief being the substantiation and correlation of history and clinical findings first by radiographic examination, and, second, by the verification of the presence of these lesions through surgery. To the radiologist particularly are we indebted for the increased recognition of disease involving the alimentary canal.

The term peptic ulcer should be replaced by the terms gastric or duodenal ulcer, which designate the anatomical location of the combination. Since they differ as to location, tissues involved, chemical environment and adjacent viscera, their symptoms and therapy are not identical.

This paper will consider gastric ulcer, admitting the difficulty in classifying some of the lesions at the pyloro-duodenal junction often termed pre-pyloric, pyloric, post-pyloric or juxtapyloric. Macroscopically, ulcer beds with their surrounding areas of inflammatory reaction cross this more or less mythical borderline so that unless judged by the preponderence of areas involved it is sometimes impossible to classify the ulcer as to location beyond the above named terms.

Certain descriptive terms are sometimes used, such as: perforating, acute or chronic, penetrating, callous, bleeding, saddle type, niche, punch ulcer, round ulcer, kissing, multiple, hidden ulcer, etc. These various terms in a limited degree describe a predominant characteristic and several are often applicable to a given ulcer. Of interest is the term "hidden ulcer," which is applied to those small ulcers which, because of their size and location, defy detection pre-operatively and often at the exploration, and yet may be productive of even the severest reactions despite their limited involvement.

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Neither a specific microörganism nor trauma unattended by sepsis can be considered of direct causation. Earlier classed as a clinical entity it is now generally conceded to be but a local manifestation of a more general pathologic process, usually infection and the resultant toxemia. To this may be added postural and anatomic variations of the tissues as pointed out by Waugh,[1] which, however, if this theory is accepted, can probably be but predisposing factor.

The studies of Rosenow[2] have to date pioneered the field in the bacteriological causation of gastric ulcer, even showing an apparent selective action of the organism. Duval and Roux[3] have shown that subsequent infections alter the progress of the disease and have suggested the advisability of protective vaccinations in selected cases. While the question of abnormal secretion as an etiological factor in gastric ulcer is still debatable, Loepez and March,[4] after a series of observations, found that hypertonia of the parasympathetic system is not, in all probability, the causal agent in gastric ulcer although subsequently this hypertonia affects gastric functioning causing hyperperistalsis and hyperchlorhydria with eventual lowering of the resistance of the gastric mucosa to bacterial invasion; also that upon severing the vagus in the presence of extensive gastric ulcer the inverse of the above occurred, namely: the lessening of hyperactivity with a resultant hypoperistalsis and hypochlorhydria as well as cessation of pain. Their deductions are that atropine is therefore the drug indicated from a physiologic standpoint because of its inhibition of nerve tonus, and their experiments showed that its maximum effect was gained by its oral administration.

In a very interesting article, Devine,[5] applying the results of the monumental investigations of Hunter,[6] discusses the rôle of posture in gastric muscles and its possible relation to gastric disease. He maintains that the abnormal stimulation of function by the sympathetic and parasympathetic systems is directly involved and possibly the principal factor in the development of gastric ulcer. The sympathetic, he states, is continuous in its action, maintaining a more or less uniform tonicity, while the parasympathetic acts intermittently and is probably the conveying force that empties the viscus. These closely allied neural systems are complementary but not necessarily balanced. His deductions are that the formation of ulcer lies in a disturbance of these myoneural mechanisms. He further illustrates the probable manner of development of ulcer in stomach or duodenum. His conclusions are that the resultant hyperacidity is in itself one of the main factors in the causation of ulcer and that any procedure directed towards its cure must have as its basis the control of this acidity. Surgically, this is to be accomplished by increased drainage, the application of that operative method favoring alkaline regurgitation and the correction of this myoneural dysfunction by removal of its cause or by its eradication through resection. To substantiate his reasonings he has case charts relative to these factors that seemingly bear out his contentions.

The alleged controversies as to the respective merits of medical and surgical management in the treatment of gastric ulcers are, we feel, uncalled for. Gastric ulcer happily is rare. Willson[7] several years ago analyzed 1,000 consecutive cases with gastro-intestinal complaints, reporting but twenty-one gastric as against 115 duodenal ulcers. The presence of gastric ulcer is always of sufficient gravity to demand the cooperative services of all fields of medicine, for beyond the immediate alleviation of distress lies the detection and eradication of the causative agents. The recognition and disposal of foci of infection is paramount. Many of these foci may long since have done their damage; yet their removal, if possible, can but result in ultimate improvement.

The pathologists inform us that scars in the gastric mucosa, single and occasionally multiple, are seen at autopsy, which means that specialized cells have been replaced by other tissue which, in this new environment, is being constantly subjected to irritation. They also report the not infrequent finding of ulcers whose margins are heavily infiltrated with connective tissues with acute and active beds suggesting not only chronicity but also the possibility of reactivation.

The symptoms of gastric ulcer are usually more severe than those associated with duodenal ulcer, often completely incapacitating the sufferer because of pain, indigestion, hemorrhage and the resultant asthenia. Because of this severity of symptoms these sufferers continue to

search for relief until a complete investigation reveals the diagnosis. Their distress in itself precludes the temporizing, and this over a long period of time, so often seen in duodenal ulcers. The average patient of today is aquainted with the incidence of carcinoma and this, plus the severity of his symptoms, causes him to seek relief. His case is made a matter of record and as a result the ratio of incidence of gastric ulcer compared with duodenal ulcer is higher than probably actually exists.

That cases of gastric ulcer should, with few exceptions, have the benefit of competent medical management, all will agree. This régime should be continued irrespective of the ultimate surgical disposition of the case. Deaver[8] asserts that there is a potential danger in gastric ulcer medically treated of from 10 to 20 per cent from perforation, hemorrhage and their sequelæ.

An analytical survey of a series of cases, classifying those eventually resorting to surgery, will evolve several groups according to signs and symptoms, namely:

1. Those of the perforating type.
2. Those of the chronic penetrating type, with involvement of adjacent tissues.
3. Those which by their location, size and nature produce gastric retention despite medical effort.
4. Those ulcers in which profuse, frequent or uncontrollable hemorrhage occurs.
5. Those ulcers in which the presence of malignancy cannot be disproved.
6. Those with associated or coexisting abdominal diseases which in themselves handicap or defeat dietary and medical management.

As Moynihan[9] has stated, the necessity for surgery in gastric ulcer means that medical management has failed. Surgery may be considered much as a court of last appeal, though at no time can its tangible assurance be shared by a dietary and medical régime because of: (1) the ever present question of malignancy; (2) the possibility of perforation and hemorrhage; (3) the possibility of further involvement of contiguous organs.

To class a given ulcer preoperatively as benign or malignant is fraught with danger despite the age of the patient, site, size and duration of the lesion. Even at the operating table the differentiation of ulcer from neoplastic change is occasionally perplexing if not impossible. As to the incidence of malignancy developing in ulcer beds, opinions vary; however, most authorities recognize an apparent association, their statistics ranging from 5 per cent to as high as 70 per cent. Granting that cancer is occasional or but coincidental, the fact remains that pre-operatively we are unable to definitely state as to the nature of any given gastric ulcer, which fact in itself is an undebatable argument for surgical treatment.

Ulcers within the stomach show a marked predilection for the pars pylorica and lesser curvature, in which areas 85 to 90 per cent of all gastric ulcers are located. In view of our present methods of dealing with gastric ulcers surgically this is fortunate, for one of the most serious problems in the field of medical endeavor is encountered in those ulcers located in the fundal area and especially those proximal to the cardio-esophageal region, since the tendency of such ulcers is towards penetration with sacculation and subsequent retention, thereby producing not only further distressing symptoms but mechanical and physiological problems of great moment.

In considering the various types of surgical procedure it is convenient to analyze the efficiency of a given method according to the location of the ulcer. Since the major portion of ulcers occur in and about the pylorus this type has received the greatest attention. Pyloric ulcers are most often attended with obstruction and subsequent retention. Hence any operative interference has as its basis increased drainage, and gastro-enterostomy, in addition to being the first operation of this nature developed, has also been most frequently practiced.

Gastro-enterostomy was first done for a case of pyloric carcinoma in 1881 by Wolfler[10] in Vienna and was antecolic and aniso-peristaltic in approximation. From the first the results have been, in the main, gratifying beyond anticipation, providing an essential is present, namely, obstruction. It was only natural to apply so great a remedy to all other gastric maladies and as a result it was soon found inadequate. Observations over this relatively brief period of years have shown that, physiologically, gastro-enterostomy has a definite though limited field of usefulness. In malignancy it is obviously but palliative and in those ulcers with hemorrhagic

tendencies relief may be but partial. It was early recognized that when the ulcer lay distal to a properly placed stoma the prospect for results was much more favorable and yet gastro-enterostomy unaided has alleviated the sufferings of many patients whose ulcers lay high in the stomach cavity. This is probably accounted for by the increased drainage with lessening of mucosal irritation, and self-alkalinization.

From the standpoint of unaltered anatomical relations and the maintenance of normal physiologic activities, simple excision, at first thought, should be the desirable procedure; unfortunately, this is not borne out by experience. The phenomenon of healing, and with it cicatricial contractions plus the break in the peristaltic current, tends to produce the undesirable features of obstruction and retention which cannot always be overcome by the numerous "plasties" advocated. Simple resection seems to lend itself to subsequent adhesions to adjacent organs, thereby fixing an otherwise mobile organ. Excision alone is best suited to those few ulcers situated anteriorly or posteriorly away from the so-called "gutter." In our experience, excision alone is contraindicated anywhere in the pars pylorica. We have on several occasions been forced to re-operate this type of case because of later gastric malfunction, in which at the initial operation the ulcer seemed ideal for so simple a procedure. At the time of exploration one is often struck by the surprisingly high location of the ulcer as compared to the preoperative radiographic localization and the much greater involvement than is portrayed by either fluoroscope or film. This latter point may be a serious hindrance to a satisfactory excision alone as too much area is often involved.

The method of excision of the ulcer by knife or by cautery as advocated by Balfour,[11] supplemented by gastro-enterostomy, has much to commend it; especially so where the ulcer is located in the lower third of the stomach. By this procedure the ulcer is destroyed as an infective focus, the possibilities of recurrent hemorrhage as well as perforation are removed, and in addition early neoplastic changes may be entirely eradicated. In ulcers in or about the pars pylorica, excision and gastro-enterostomy offer an added assurance of success when cicatrization and contraction due to the plastic resection further narrow and obstruct the pyloric outlet. This enhances the early and continued functioning of the short-circuiting stoma.

In 1881, Billroth[12] evolved the operation which to date bears his name and is known as the Billroth I. This procedure consists of a pylorectomy or partial gastric resection with anastomosis of the duodenal stump to the partially closed end of the stomach. This operation, while an advance in gastric surgery, has certain definite drawbacks. It is difficult of application in the presence of marked tumefaction in and about the pylorus or duodenum or in the presence of coexisting duodenal ulcer. Again, in extensive resections, undue tension at the line of anastomosis may occur through shortage of the duodenal stump. Leakage at suture lines in this operation has been commonly claimed as one of its greatest faults. To obviate this factor Kocher[13] brought forth his modification, which, however, has never been universally adopted in view of subsequently improved procedures.

Shortly after Billroth's first method of gastric resection was published,[14] he brought forth his classical piece of work, the so-called Billroth II. Of all technical methods of gastric surgery this was the greatest advance for it widened the field of gastric surgery, as more extensive gastric involvements could be dealt with and in addition the gland-bearing areas could be extirpated. Another added feature was that it could be used as a two-stage operation, impossible with previous methods. However, there were still difficulties encountered; it was transmesocolic in approach, requiring the application of a gastro-jejunal anastomosis. Again, it was unsuited for major gastrectomies as the jejunal attachment was insufficient in area to prevent marked angulation of the afferent or efferent loops. To eliminate this, Hadra[15] in 1891 suggested that the arms adjacent to the stoma be attached to the stomach to prevent this kinking with resultant spur formation and obstruction.

The next definite advancement in the evolution of gastric surgery came through Polya's development[16] of his technic of resection with gastro-jejunostomy, end to side. This procedure allows resection of greater portions of the stomach, including the gland-bearing areas, without prolonging the operating time. It is a one-stage operation, transmesocolic in application. Several

years later Balfour[17] recommended the antecolic anastomosis of jejunum and stomach side to end, which has simplified the original method and is usually known as the Polya-Balfour or Anterior Polya. This modification has many improvements over its original in that it has further lessened the operating time and obviated transmesocolic hernia and strangulation; in fact it is an improvement from every point of view. For a one-stage method of gastric resection applicable to all magnitudes of involvement, we feel, the original technic as outlined by Polya or the Balfour modification is best suited. Great stress was laid on the jejunal approximation having the proximal loop at the lesser curvature side of the amputated end of the stomach to insure better drainage. Moynihan[18] in the fourth edition of his book on abdominal surgery describes in detail a method long used at the Leeds Infirmary in which the jejunal anastomosis is anterior in type with the proximal arm at the greater curvature margin, simply reversing the peristaltic current. This method is known as the Moynihan II. We have on two occasions, because of anatomical variations, used this method and it has been satisfactory. He also describes another method of anastomosis in which the jejunum is divided about six inches below the flexure; the distal end is closed and its side approximated to the stomach end while the severed proximal stump is united into the distal loop below the gastro-jejunal union. Mechanically this should be an ideal method; however, it involves too much surgery and has been discarded. He further states he has had several recurrences of trouble with this method.

In all the methods of extensive or high gastrectomies, knuckling of the proximal or distal arm or both with resultant narrowing of the lumen and obstruction may obtain. This probably occurs more often in those of transmesocolic approach as the base of the triangle formed by the loop is upwards with the apex at the rent in the mesocolon. However, in extensive gastrectomies done by the antecolic method, gravitation of loops with resultant pulling at points of gastric fixation can produce the same results. This convergence of the loops in the posterior type may, under certain conditions, produce the above mentioned kinking and spur formation, in spite of the application of Hadra's technic.

In 1892 Braun,[19] to combat this undesirable feature in gastro-enterostomy, performed entero-anastomosis between the afferent and efferent loops, and this has been utilized as indicated in all subsequent methods. In several instances we have applied this relatively simple procedure to a previously operated case. In two cases it was used with subsequent relief where the original operation was of many years' standing. A point here is worthy of note. When angulation of a loop with obstruction occurs there is a marked dilatation of the arm which must be considered at the time of the entero-anastomosis, for with the release of the obstruction the bowel soon regains its normal tonicity, thereby reducing the calibre of the stoma accordingly. Some surgeons apply this loop-to-loop anastomosis routinely in gastrectomies of major proportions. It has been our good fortune, when operating on the biliary tract, to have seen two of these which had been done seventeen and twenty-three years previously, where the stomæ were functioning.

Annular resection, variously termed the sleeve, cuff or cylindrical method, has certain definite limitations, as the ulcer must be at or near the pars media; from the standpoint of restoration of tissues it is ideal, yet because of its limited field of usefulness and the ever-present post-operative complications of hourglassing and deformity due to adhesions, we feel it is better supplanted by some other method of gastrectomy, which in addition removes the ulcer-bearing area of the lower stomach.

Schoemaker[20] of the Hague, Holland, before the Clinical Congress of American Surgeons, in 1921, described a method which he has developed following essentially the principle of the Billroth I, but in addition to which he removes a longitudinal portion of the lesser curvature and with it the gland-bearing area. He recommends a special gastric clamp to carry out the plastic resection. We have had no experience with this method.

The disposition of the amputated duodenal end pertains in all types of gastrectomy with the exception of the Billroth I, Schoemaker and Annular methods. While the literature generally makes but little mention of it, its successful closure may, under certain conditions, be exceedingly difficult because of anatomic variations, inflammatory processes such as duodenitis, duode-

nal ulcer and adhesions. The ease of closure can be greatly augmented by the identification and preliminary ligation of adjacent vessels, particularly the postpyloric group. While the purse-string method is desirable, it cannot always be employed. Invagination of the margins with serosa-to-serosa approximation must always be done, following which further protection is secured by tacking over tags of fat omentum, or by burying the stump in contiguous tissues. In cases with a short stump where the ulcer lies sufficiently high, a portion of the pars pylorica may be left to facilitate greater ease of closure, adopting the principle worked out by Andrews[21] in disconnecting gastro-enterostomy stomata and later described by Devine[22]. We have done this on several occasions with satisfying results.

The various procedures above mentioned and but briefly described are essentially the outstanding technical advances in gastric surgery. That there is still need for further development, all will agree.

As previously inferred, the actual application of any given method is but a step in the individual's return to health and he should be under the co-operative guidance of medical supervision. At this time one should mention the advances that have been made in anesthesia, particularly the use of local anesthesia, especially in the aged, dehydrated individual, with associated pathologic processes, who, despite preoperative preparation, ofttimes remains a poor risk.

No particular mention has been made of the necessity for the proper disposition of associated intra-abdominal lesions occurring in conjunction with gastric ulcer. Any untreated pathologic process can but augur ill for the best of surgery aimed at the cure of gastric ulcer.

The success of gastric surgery, as in all procedures demanding judgment and manual dexterity, will be in keeping with the degree of technical skill developed. Team work is here a necessity if neatness and despatch are to be realized.

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DISCUSSION

Dr. H. B. Sweetser: Just before we came here Doctor Cabot asked me if I would open his discussion, and a discussion to be of value should be preceded by some thought. This paper shows a great deal of thought and research and is so much up-to-date that there are some things in it that I have not as yet become acquainted with.

First as regards diagnosis. We have made great advances in the differential diagnosis of gastric ulcer from duodenal ulcer by means of the *x*-ray. I used to think that hemorrhage from the stomach would pretty well indicate that our patient was suffering from an ulcer with active hemorrhage. That is not always true. I know of one case in which we had an enlarged spleen in which there was hemorrhage from the esophagus. You may have profuse hemorrhage due to varicosity of the esophageal vein.

There is a great difference of opinion as to the necessity of operating for gastric ulcer because of the likelihood of cancer. At Rochester they said that 5 per cent of the cases develop carcinoma. I personally agree. If I have a patient who comes to me at the cancer age with symptoms pointing back many, many years, I feel that that patient may have ulcer of the stomach without cancer. If I have a patient come to me at the same age, 40, 45 or 50, and he says he has never had any trouble with his stomach until the last month or two, this patient, I find, will probably have a carcinoma. I am regulated somewhat as regards diagnosis from this standpoint.

As regards methods of treatment. There has been a great deal said about excision of the ulcer-bearing area. Whether it is necessary to subject a patient to so serious an operation as excision of a large part of the stomach in the presence of ulcer which is, so far as we can see, not carcinoma, is debatable I think. If a person has a gastric ulcer and you feel pretty sure that it is not carcinoma, the good results of the less

dangerous operations recommend them. Gastro-enterostomy does not always succeed in curing your patients. It does relieve symptoms in a great many cases but not always. We have now a patient on whom I did a gastro-enterostomy twenty years ago for an ulcer of the stomach and for quite a while that patient was well. She again had vomiting of blood and now *x*-ray shows a penetrating ulcer high up on the lesser curvature near the esophagus. Her chest is so formed that the ulcer is probably two or three inches above the costal arch. With the test meal, that pocket will contain I should think about two or three grams. Every once in a while she will fill that. Something will obstruct the opening so that it fills and she is in pretty wretched shape. She will vomit a great deal. I would rather let her alone than attempt to do something we cannot get at. Any ulcer that is a saddle ulcer on the lesser curvature is a very difficult thing to take out and the higher it is toward the cardiac end the more difficult it is. We have had one in which we made a wedge and then did a gastro-enterostomy with good results. In ulcer near the pylorus the Horsley operation has been satisfactory in several cases.

In the presence of hemorrhage what are we to do? I think that less risk is run by waiting until the patient has recovered from the results of a severe hemorrhage than submitting him to a serious operation, which may be prolonged, in the presence of very marked anemia. Most of these patients do recover, and if one takes the opportune moment they can be operated on and relieved.

Dr. Ivar Sivertsen: I recently read an article relative to the value of gastro-enterostomy in a series of cases at Rochester, and in this article they claimed about 95 per cent perfect results after gastro-enterostomy. Dr. Cabot is to be complimented on this paper and I wish I had had an opportunity to digest it before discussion.

The question of a Billroth I operation was also discussed in the issue of the paper that was referred to above and a modified operation was described, known as a gastric duodenostomy. To me it looked to be a very satisfactory method from the standpoint of anastomosis.

The question of hemorrhage is interesting. Some few years ago I had my own brother in the hospital with a hemorrhage from a gastric ulcer. Dr. H. B. Sweetser was called in consultation, and when the question of operation was spoken of, he advised waiting. His hemoglobin at this time was 60 per cent and normally was 85 per cent. When one has hemorrhage from an ulcer as close to home as was the above case one becomes very much concerned. Watchful waiting was practised in this case and he has had very little trouble since. I have never seen a case of carcinoma develop where a history of gastric ulcer hemorrhage some years before was elicited.

Dr. S. R. Maxeiner: I don't know whether the members have read Finster's work or not. It was rather interesting to see the radical operations which he advocated and which he performed under local anesthesia. He brings out very forcibly one thing which I have been following ever since I read his book with reference to the prevention of post-operative pneumonia. He makes every patient cough after the operation, believing that post-operative pneumonia results from the accumulation of secretions in the base of the lung because the patient has a sore abdominal wall and does not have a ready excursion of the chest and does not expectorate. He instructs his nurses to make the patient take deep breaths and cough, and he also instructs his ward surgeons to make the patient cough. If the patient does not cough and won't cough, then he uses forcible expression. The fact that he has performed 460 gastric resections without a death from pneumonia, makes one think there must be something to it.

Dr. W. D. White: I enjoyed this paper of Dr. Cabot's very much. In discussing the diagnosis he emphasized the use of the *x*-ray and rightfully so. However, I believe there is a tendency to neglect the clinical study and depend too much on the *x*-ray examination alone. When a patient gives a history suggestive of gastric ulcer I believe the best way is to give such a patient a careful clinical study before the patient is *x*-rayed. This should include gastric analysis, a clinical test as to the behavior of the distress, stool analysis for blood, etc. I know of a case recently where there was a definite history of ulcer obtained and a complete examination and study was made and the patient sent to *x*-ray and the report came back stating that there was no evidence of gastric pathology. On account of the definite history and findings the patient was *x*-rayed again and definite findings indicating a gastric ulcer were found.

Dr. Cabot has touched on the possibility of carcinoma arising at the site of an ulcer. Statistics vary greatly on this point with different observers. It is very likely that carcinoma does not arise as frequently at the site of an ulcer as has been stated by some. However, many times when papers are read on this subject it will be stated that carcinoma may arise from an ulcer and give this as one of the indications for operation. Then later in discussing this subject they will state that gastro-enterostomy gives a satisfactory method of treating stomach ulcer.

It would seem to me that if the tendency of a malignancy to arise at the site of an ulcer is one of the indications for operation, more than a gastro-enterostomy should be done; that is, a resection and a gastro-enterostomy would be a more logical method of treating a stomach ulcer where malignancy is to be considered. Simple resection of an ulcer itself is not always satisfactory because of cicatricial contraction that will occur and interfere with the emptying of the stomach.

I feel that Dr. Cabot has given a very sane, thorough and conservative discussion of this subject.

SOME PRESENT DAY PHASES OF THE MEDICAL TREATMENT OF DUODENAL ULCER*

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The fact that there is a natural tendency for duodenal ulcer to heal is no doubt one reason why so many different methods of treatment yield good results in the majority of cases.

Medical management should afford relief to our patients within twenty-four hours. If this does not occur our treatment is faulty or, as is more often the case, an incomplete or mistaken diagnosis has been made. As long as there exist various conceptions as to the etiologic factors in duodenal ulcer there will, no doubt, also exist variations in treatment.

It seems logical that the treatment should be made to fit the particular case in hand. It is essential to study the patient's constitutional make-up and to direct his mode of living.

Better hygiene, attention to dental infections, proper mastication, removal of diseased tonsils, more hours of rest are factors which help to eliminate many an ulcer.

The medical management of uncomplicated duodenal ulcer is very satisfactory if proper attention is given to dietary details. Too often the patient is given alkalies and told to eliminate meats or other foods from his diet with the result that nothing is accomplished. As a matter of fact the secret of all diets lies in the frequency and regularity of feedings. A great variety of diets have been recommended. All or most diets in common use are modifications of the Lenhartz diet. This is, no doubt, the reason why so many of them produce results. However, individualization is important. The diet should be arranged to fit the patient at hand. A routine diet for all patients is faulty. Some patients do well on milk diets, while others may have an aversion to milk and will do better on other soft foods. Foods should be simple, free from spices and of proper caloric value, vitamine and mineral content. After all, the basic reason for giving soft, bland foods in small quantities and at frequent intervals is that thus less motor activity is required and the stomach secures much-needed rest.

If the patient is actually ill, anemic, much under weight or has had a hemorrhage, a few weeks rest in bed is essential. We find it impossible to put the average ulcer patient in bed for any length of time. As a rule patients are allowed to continue their work but if they can spend at least the first week at home resting, better results can be expected.

Harris stresses the personal equation in dieting ulcer patients. He speaks of the necessity of providing proper vitamine content and also of considering the patient's age, weight and general condition. He prescribes a specific, balanced diet for each individual patient and emphasizes the necessity of applied personal hygiene.

Bastedo says that duodenal ulcer is not so serious a disease as gastric ulcer and the outcome of treatment medically or surgically is more often satisfactory. In his opinion medical treatment is successful in the majority of cases of duodenal ulcer. His treatment includes rest in bed for three or four weeks and a diet beginning with peptonized milk and the gradual addition of eggs, cream, toast, cereal, custard, farina, potato, milk and cereal puddings, vegetable purees and ice cream. The meals are small and frequent and not given ice cold. He uses alkalies in moderation and never uses lavage as a routine. Duodenal feeding, he considers an unnecessary trouble. The treatment is assumed to take a long time and the diet should be strictly regulated for at least a year. Those patients who do not become symptom-free within twenty-four to forty-eight hours and remain so are transferred to the surgeon.

Coleman has recently advocated a three to five day fasting for the stomach while he nourishes the patient with glucose per rectum and gives by mouth only egg-white and olive oil or cream. This diet is deficient in vitamines and minerals. Then, too, many patients cannot tolerate the prolonged administration of nutrient enemata.

Before instituting medical treatment one should be certain that the patient's condition is favorable for such procedure.

The effect of treatment also will depend upon the extent of the pathologic lesion. Slight erosions heal more readily than deep ulcers. Constitutional predisposition and associated or

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concomitant lesions will naturally affect the result of treatment or tend to cause recurrences.

The consideration of gastric ulcer in this paper has purposely been omitted because of the fact that, even when the crater is small, one cannot with certainty eliminate the possibility of cancer. It is naturally a much more dangerous disease and its treatment demands entirely different consideration. Certainly surgical measures are safest in all except the very early or recent gastric ulcers.

In the duodenum the possibility of malignancy is very remote. However, if there is marked obstruction, if there have been repeated or severe hemorrhages, if the patient has had repeated more or less unsuccessful medical managements, or if he is a laborer who cannot or lacks sufficient intelligence to carry out instructions, surgery should be recommended.

Alvarez believes that the medical treatment should be reserved for early cases and for those who have leisure and money to spend on what may turn out to be but temporary relief, and for those who on account of business or other reasons cannot afford the time for an operation.

He also endorses the ambulatory treatment for those who must remain at work. For these he advises three meals chosen from a smooth diet list together with between-meal feedings of milk, cream and eggs. If milk is not tolerated he substitutes thin cereal gruels. He finds that most patients get along comfortably on frequent feedings without the use of alkalies. In the last thirteen years he has prescribed alkalies only five or six times.

It has been pretty well established that the acid gastric juice is not the factor which prevents healing even though it may have played a part in causing the ulcer. We know that ulcers heal spontaneously even when gastric acidity is high and also that ulcers occur in stomachs which have little or no free hydrochloric acid.

Many patients get along very well when little or no alkalies are administered and we have seen them get along better without alkalies.

Frick says that if infection and functional hyperacidity are the factors which prevent healing, alkalies are definitely contraindicated and he favors sedative treatment.

He starts his patients with a fast, allowing only small amounts of water at frequent intervals until the patient has been free from pain for twenty-four hours. Water, he says, inhibits hunger contractions. Rectal feedings are not used except in cases of extreme debility or profuse hemorrhage. In his diet, he eliminates meat extracts, acids and alcohol entirely and reduces the salt intake to a minimum. He prescribes fats freely with proteins and carbohydrates, minerals and vitamines to balance the diet. He increases the diet very gradually and uses bismuth subnitrate alone or with opiates because it acts as an anodyne, an antiseptic and an antiphlogistic. From his experience with 700 cases he finds that alkalies are unnecessary in the average case.

Some have pointed out actual danger in the prolonged administration of alkalies. Hardt and Rivers have carried out investigations in regard to intoxication resulting from alkaline therapy. Jordan recently studied the effects of alkalies as administered in the Sippy treatment of duodenal ulcer and found abundant evidence of alkalemia. She suggests that a minimum dosage of alkalies necessary for neutralization be established in each case.

I do not wish to imply that we have discontinued the use of alkalies nor have we seen cases of alkali poisoning. No doubt, however, many patients are given more than ample dosage or are continued too long on alkalies. We prefer to begin the treatment with minimum doses of alkali between feedings and gradually reduce the dosage. Here too, much difference is found in individual cases. As a rule all alkalies can be discontinued after the first six weeks of treatment.

Frick likewise advocates the ambulatory management of those cases which are not acute and of those which are not complicated by anemia or gastric dilatation.

Most patients get along nicely and eventually recover on ambulatory management but if the patient can rest at home for a week or so the treatment is greatly facilitated.

Prolonged treatment in bed is usually necessary only in acute cases with extreme tenderness, in cases with marked gastroptosis or if there has been bleeding.

General hygiene, regular habits, eradication of infectious foci and moderation in eating, drinking and smoking will do much to prevent a recurrence of duodenal ulcer.

We recently sent out questionnaires to 294 cases diagnosed as uncomplicated duodenal ulcer. All have been under observation more or less from two to five years. To date, replies have been received from 152. Of these almost 50 per cent state that they have been symptom-free; about 15 per cent report that they are much better but still have periods of discomfort; another 15 per cent report that they have been operated, presumably for ulcer; about 12 per cent declare that they are no better and the other 8 per cent report that they have been operated and found to have other trouble, usually gall-bladder disease. Of the latter 8 per cent two were reported as dead.

Among the 27 per cent who declare that they are no better or only improved, no doubt many could be found who have not remained under observation and have not carefully adhered to any dietary program. Some of them are surgical and others have associated diseases or conditions other than that diagnosed.

Naturally one wonders what has become of the large number from whom no reply has been received. It seems, however, that one could expect at least as favorable a percentage of recoveries from them. Reports are still coming in and usually the patients who are no better are the first to make the fact known. Many have moved and cannot be located.

CONCLUSIONS

Dietary management, with consideration of the constitutional requirements of the individual, produces good results in the majority of uncomplicated cases of duodenal ulcer.

Ambulatory management is not only an economic necessity, in the average patient, but produces good results when the diet is properly regulated and when the patient co-operates.

Rest in bed is imperative when the patient is acutely ill, anemic due to recent hemorrhage, undernourished or when there is marked ptosis.

The frequency and regularity of feedings are of much greater importance than the administration of alkalies. The amount of alkali given should be reduced to a minimum and many patients will do well on little or no alkali.

Proper attention should be given to personal hygiene, foci of infection should be eradicated and the patient's habits and mode of living should be regulated.

Observation and treatment should continue for at least one year. Some patients will have to remain on a restricted, yet sufficiently nourishing, diet indefinitely. Most of them soon learn that after all we should eat to live and as soon as they discover that their stomachs are not made of cast iron all is well.

If relief is not permanent in spite of dietary restrictions the patient either has associated or complicating trouble such as obstruction or gall-bladder disease, or for some other reason will not respond to dietary management and is surgical.

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THE ORGANISM OF RHEUMATIC FEVER

A report of the isolation of the specific organism causing rheumatic fever has been published, and also the results of trials with an antiserum. Streptococcus cardioarthritidis, the name given to the organism which was isolated from the blood culture of only two patients with rheumatic fever, differs in only one respect from the usual non-hemolytic streptococcus. The claim of the relation of the organism to rheumatic fever appears to rest chiefly on the results obtained from treating patients with an antiserum prepared by immunizing a horse with this streptococcus. The case reports are not convincing. Favorable reports with a serum prepared by immunizing horses with cultures of streptococci isolated from throats of rheumatic fever patients have been published previously; they were probably due to a non-specific reaction. Since then, curative effects have been reported from the use of various forms of non-specific protein preparations. (Jour. A. M. A., Feb. 5, 1927, p. 405.)

TREATMENT AND RESULTS IN FRACTURE OF SHAFT OF FEMUR*

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The following is a brief review of fifty cases of fracture of the shaft of the femur. Inasmuch as there is a marked diversity in methods of treatment, standard methods will be reviewed. Twenty cases were followed and results of treatment tabulated. A few case histories and case demonstrations will be given to demonstrate the need of adequate treatment; also to show end-results and some complications which often follow.

tive cases, confined mainly to the lower (24 per cent) and middle third (76 per cent) fractures.

For brevity, the types of fracture and age percentages will be charted.

The accompanying table reveals the relative infrequency of compound (8 per cent) and comminuted (8 per cent) fractures and further that they were located in the middle and lower thirds.

There is a relative high percentage of fractures in the middle and upper thirds. Oblique and spiral oblique fractures predominate in the upper and transverse in the middle third. The type of fracture (whether oblique or transverse) depends to a great extent upon whether the cause is direct or indirect violence. In the former, transverse fractures usually result, and in the

CHART I

Fifty Cases

Kind of Fracture	Simple 42	Simple Commin. 4	Compound 4
Type of Fracture	Oblique 13	Transverse 23	Spiral Oblique 14
Site of Fracture	Upper Third 17	Middle Third 23	Lower Third 10
Type—according to site	Upper Third Ob. 94%	Middle Third Tr. 65%	Lower Third Equal No. 0 and T
Site of Compound and Comminuted	Upper Third Comp. 0 Commin. 0	Middle Third Comp. 3 Commin. 3	Lower Third Commin. 1 Comp. 1
Age Percentage	Under 15 years 65%	Under 25 years 84%	Over 55 years 4%

The treatment of all fractures and therefore of the shaft of the femur is directed toward: (1) reduction of the fracture, followed by (2) immobilization or fixation of the bones in the corrected position.

The particular type of treatment to be used depends: (1) upon the type of fracture (*i.e.*, whether simple, compound, comminuted, transverse oblique or spiral oblique); (2) upon its location; (3) upon the age and general condition of the patient; (4) upon the ability of the attending surgeon to utilize available methods.

In this series, treatment was in most cases instituted early. Only four cases were untreated for more than twenty-four hours after entrance. Ether was used in 66 per cent of cases in attempting reduction. There were thirteen operatlatter oblique or spiral fractures follow. Most fractures of the shaft of the femur occur in youthful individuals.

This probably explains the variety of treatments given, nature aiding in the end-results. Fear of complications due to debility as in fractures of the neck of the femur is almost out of the question here. Union should be more rapid. There should be fewer local complications and a better prognosis in those cases demanding operative interference.

Having observed the age limits and types of fracture, it is interesting to note that sixteen varieties of treatment were used in the fifty cases. This does not include the six methods used in treating the thirteen operative cases. Briefly operative methods consisted of simple jamming of bones together in proper apposition; beef bone plate; Lane plate; Parham band; autogenous

*Membership thesis prepared from study of St. Mary's hospital (Duluth) records, covering cases from 1918 to 1924 inclusive, and read before the staff at its regular meeting April 7, 1927.

graft. In one case, removal of sequestrum was necessary in a compound infected fracture. The next chart illustrates the types of reduction used here.

It will be noted that there are two forms of skeletal traction which have not been used in this series—ice tongs or Besley tongs and Steinman nail. Further, that the forms of treatment predominating here are the simplest, namely, overhead right-angle suspension, Buck's extension, Thomas splint, and cast only. Elastic traction is the method of choice in this group.

I shall briefly review some of the common methods of treatment, keeping in mind the cardinal principles of treatment in shaft fractures as follows:

1. The lower mobile fragment must be apposed to the more fixed and usually rotated upper fragment.

2. Traction must be directed in the line of the long axis of bone, and therefore usually in the line of the upper fragment.

3. X-ray follow-up plates must be taken to demonstrate the correctness of the treatment.

I shall discuss treatment under three heads—upper, middle and lower thirds. In many instances one method is suitable for fractures in the adjoining third of the shaft, but rarely in all three locations between the trochanters and condyles.

In order to know the reason for a given form of treatment, a short anatomical review of fracture in the upper third will be given with the aid of a diagram. This will explain muscle pull in the middle third as well.

Upper third (subtrochanteric) fractures are usually oblique, and therefore there is almost always displacement of fragments (Fig. 1). The

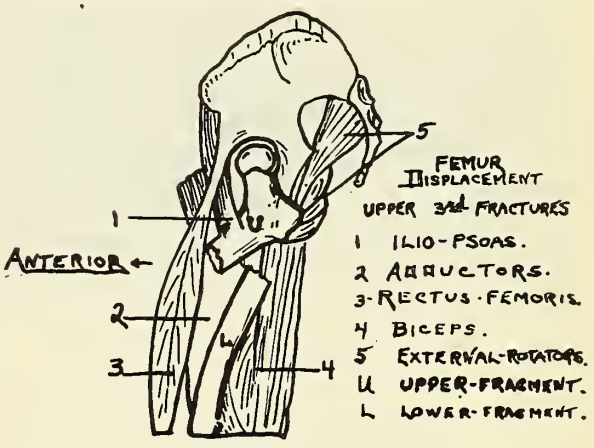

Fig. 1.

small upper fragment (U) is usually tilted forward by the iliopsoas muscle, and abducted and everted by the gluteus minimus and external rotators. The lower fragment (L) is pulled upwards and inwards by the hamstrings and abductors and there is usually eversion due to weight of foot and abductors. It is evident from the above that the usual methods of long splints and extension will almost always give union with angulation and faulty rotation.

Davison's method can be used in older children and in adults. As illustrated in Figure 2, it consists of a Buck's extension on the leg.

CHART II

Type of Treatment	No. Cases	Type of Treatment	No. Cases
Overhead Extension Alone	2	Buck's Extension + Double Inc. Pl. + Cast	1
Overhead Extension + Cast	9	Buck's Extension + O.R. + Cast	5
Overhead Extension + Lateral Splints + Cast	2	Thomas Splint Only	5
Overhead Extension + O.R. + Cast	3	Thomas Splint + O.R. + Cast	1
Overhead Extension + Thomas Splint + O.R. + Cast	1	Thomas Splint + Cast	3
Buck's Extension Only	1	Immediate O.R. + Cast	4
Buck's Extension + Cast	5	Double Incline Plane + Cast	1
Buck's Extension + Thomas Splint	1	Cast to Mid. Femur + Buck's Cast	1
		Hip Spica Abduction Only	5

The knee is slightly flexed. An anterior molded splint (plaster) is applied over the leg and thigh which is secured by a gauze bandage. A series of rings can be incorporated in the plaster in such positions that external rotation will follow.

Fig. 2. Method of suspension by anterior molded splint in treatment of fractures of the femur (Davison).

The leg is abducted and suspended high enough to allow the lower to fall in line with the anterior pointing upper fragment. Shortening is overcome by weights on the Buck's extension.

A common method shown in Figure 3 is the right angle overhead elastic traction of Schede. It is used often because it is simple and does not attempt anatomical reposition of fragments. In spite of its simplicity and poor anatomical results, it succeeds. This is due to the fact that in children under fifteen years of age a good functional result depends less upon good anatomical results than in older individuals. Bad functional results are almost negligible (3 per cent).[1]

In our series there were thirteen cases treated by this method. They were all under eleven years of age. Extension was removed on an average of thirty-four days. In eleven cases plaster spica was applied. Two infants required only suspension. Two cases required operative interference, but these were in fractures of the middle third where this type of treatment is also used.

In *middle third fractures* there is no uniformity in the position which the fragments assume. Displacement almost always occurs. Overriding may be marked. The normal anterior bow of the femur may be easily distorted by malunion. The upper fragment is usually tilted forwards. The lower fragment is pulled upward and inward, the displacement being in much the same direction as in the upper third, with usually more overlapping.

Most of the fractures of the middle third were transverse. An attempt should be made to reduce all transverse fractures immediately. Failing this, traction should be tried. About two weeks of this is enough to determine its success. If correction cannot be made, operative interference is indicated.

Fig. 3. Suspension method of treatment of fractures of thigh in children (Davison).

A closed method here illustrated (Fig. 4) is simple and effective in middle third fractures. It

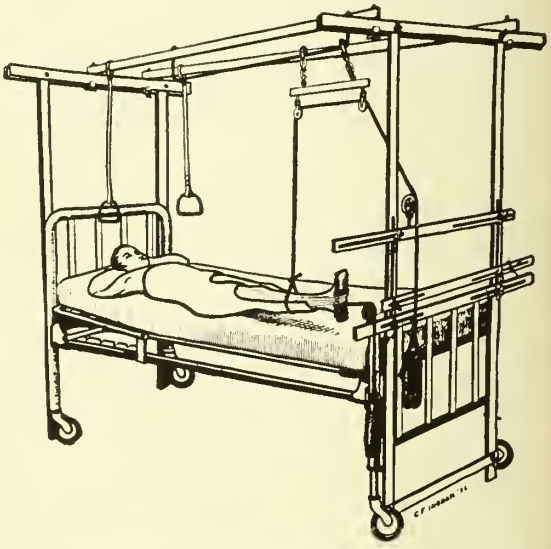

Fig. 4. Type of mechanical apparatus used in this type of traction. The weight of vertical traction is enough to lift the leg from the bed about 6 or 8 inches (average 16 pounds probably). The foot of the bed is elevated 8 inches. The position of the leg is from 15 to 25 degrees abduction, the knee is slightly flexed, and the foot is balanced at right angles to the leg. The Sinclair skate is used as a block at the foot. The handholds allow the patient to move about in bed.

may be used in upper third fractures also. It is the method of West[2] consisting of Buck's extension and a body cast. The latter may include one or both thighs. In the injured limb it

should surround the thigh down to its lower third and extend from there as a posterior splint to the middle of the leg. Combined with Buck's extension applied prior to application of cast, and with elevation of the foot of bed and appli-

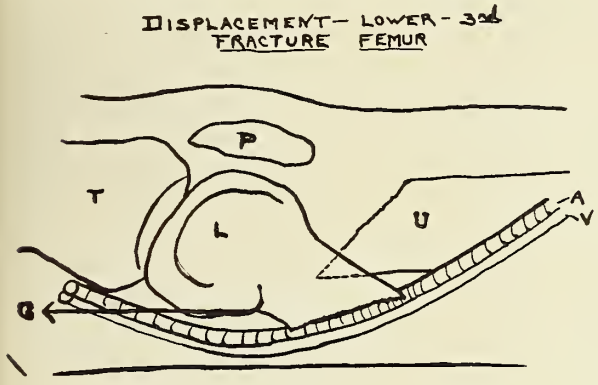

Fig. 5.

cation of frame to bed, it allows abduction and a degree of comfort to the patient.

In the *lower third* one sees an occasional impaction with the fragments in good alignment. These cases are easily handled but are not frequent. The usual form of displacement is shown here (Fig. 5). Lower third fractures included here do not include the joint but are supracondyloid. As seen in this fracture, the lower fragment in direct violence is usually tilted backwards and may compress or rupture the popliteal vessels or injure the nerve. This often results in gangrene. The upper fragment lies forward and if oblique may penetrate and become fixed in the quadriceps muscle group.

If the upper fragment is not fixed in the muscle tissue, the double incline plane or Besley tong may be used. To reduce the fracture, the leg must be flexed upon the thigh until the lower fragment takes the same axis as the upper. In the double incline plane, the angle is adjusted so that the weight of the body pulling against the fixed flexed knee produces extension sufficient to appose the fragments.

Another method is the ice tong or Besley Caliper. Eliason[3] believes this to be the best method of treatment in adults for lower third fractures. It is shown here (Fig. 6). It may be used in middle third fractures as well. Orr[4] is opposed to elastic traction and prefers ice tongs or fixed traction alone or in combination with cast treatment. The technic is not difficult and can be carried out aseptically. If the points are driven into the bone far enough so that a weight will be borne, traction can be made in a direction which with flexion of knee will overcome the flexed lower fragment. If a cast is used, Orr believes a double spica is preferable to the single.

Operative technic will not be discussed. In view of the relatively high percentage of operative cases (26 per cent), a few remarks in regard to indications are in order. The marked diversity of opinion on this subject is probably due to the fact that (1) few men are capable of applying the exacting technic correctly, and (2) operative methods are used when closed reduction has failed. It is evident that without the proper skill and given only the hardest cases to treat, an accurate comparison of results of open and closed reduction is not possible.

It has been shown by the report of the American Surgical Association, 1915, that "early operation is preferred if and when operative

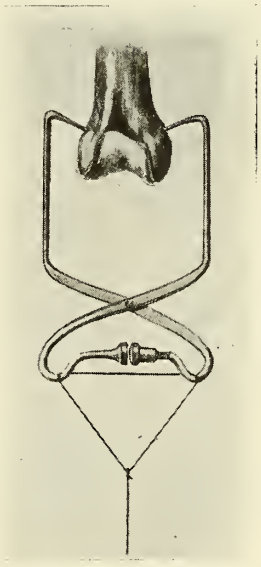

Fig. 6. Pearson's extension callipers.

methods are decided upon." This committee further believes that in a given case of poor reduction by closed methods, it is not advisable to operate "unless reasonably certain that an accurate anatomical result can be secured." Except in younger individuals, it has been found that if a good functional result is to follow, a good anatomical position must be attained. If good reposition is not brought about by opera-

tion, the additional injury to the soft parts is detrimental.

It is the opinion of Sherman[5] that in simple fractures the operation should be done within ten or twelve days following injury. Further, granting the necessary skill and equipment in all shaft fractures in which there is overlapping or in which there is less than 25 per cent end-to-end approximation of the fractured surfaces, operative treatment is indicated. At the other extreme, we find the following statement by Hill: "Open reduction is the treatment of last resort and should be undertaken only by a surgeon familiar with the hazards of bone surgery." Anyone who has cared for an infected case will agree with this statement. The poor lymphatic supply in the region of a fracture will not allow for the same technical error as the peritoneum.

Aside from non-union and malunion "persistence of deformity of such a kind and degree as to cause serious loss of function, and which cannot be corrected by closed methods," seems to be the indication generally held today for operative interference. The degree of deformity considered sufficient to warrant open reduction varies from 25 per cent apposition to overlapping, depending upon individual judgment.

The *results* of *fracture* of the *shaft* of the *femur* are listed in a follow-up of twenty cases, 65 per cent being under fifteen years of age and 35 per cent over. Fourteen different methods were used in treating the twenty cases. There were four operative cases. No attempt will be made to compare operative and non-operative results because of the small number of operative cases. The following chart will illustrate the findings.

It will be seen that simple non-complicated operative cases treated after closed methods failed left the hospital 8.4 days sooner than those cases treated by closed methods alone, that is, if we begin counting from the day of operation. Operative cases were bedridden 4.9 weeks less than those treated non-operatively. Crutches were discarded 5.3 weeks sooner in simple operative reduction cases. Total disability was slightly less in operative cases, but, as I said before, the number of cases was too small for accurate comparison. Permanent disability was present in 20 per cent of cases heard from and in all consisted of a limp, with pain in leg in one case and stiffness in another. Total disability in all cases of fracture of the shaft of the femur was 7.1 months as compared with 6.1 months.[1] Evidently a good functional result was obtained in 80 per cent of all cases and disability extended from two months in infants to eighteen months or permanent limp in adults. Inasmuch as there is

CHART III

Comparative Results Operative Reduction and Non-operative Reduction. Twenty Cases.

No. of cases	Type of fracture	Number of days in hospital	Disability in bed, chair and wheel chair No. of weeks	How long were crutches used? No. of weeks	After crutches were (*a*) pain in limb, (*b*) stiffness in knee, (*c*) limp noted	Further treatment has been necessary No. of cases	Total disability from work or usual duties No. of months	Permanent disability
12	Closed R Simple	37	15	12.8	25%	2	6.9	Limp 2
2	Closed R S. Comminuted	86.6	14.5	25	100%	0	9.7	0
4	Open R Simple	28.6	10.1	7.5	75%	0	6.2	Limp 1
2	Open R Compound	163.5	15	19	100%	1	8	Limp 1
20	All	57.1	13.6	12.3	(*a*) 33% (*b*) 50% (*c*) 29%	3	7.1	4

a high percentage of patients complaining of stiffness in the knee, limp and pain, more care should be exercised in attempting forceful reduction. Also, after-treatment with massage and proper movements should be given.

and give in most cases merely the appearance of well maintained reduction. Further, after their application, the patient is usually sent home so that *x*-ray follow up is usually nil except when too late.

Fig. 7. Case 1. (a) First plate. (b) Three weeks later. (c) Three months later.

Our results are the same as Scudder's report of simple uncomplicated fractures in patients under fifteen years of age showing one hundred per cent good functional results in this class of cases. Over fifteen years of age his report was 24 per cent good functional result, our was 66 per cent (his series includes sixteen and five cases respectively).

In infants fracture of the femur shaft does not seem serious, as two cases showed no delay in learning to walk.

No mortality was noted in this series of fifty cases. In fifteen hospitals and over 11,946 cases treated non-operatively, the death rate has been reported 1 per cent.[1] In the operative cases (1,040) the death rate was 0.77 per cent.

In those cases treated by cast *alone* only one showed a good anatomical result. The rest were poor. Cast alone without traction, except in cases of impaction or immediate reduction, should not be used. The closed methods may be safe and serviceable but large casts are deceptive

Case 1.—(Upper third. Figure 7, a, b and c.) Female, aged 6, injured in auto accident. General examination negative except sugar in urine in two tests. Fracture of upper third spiral oblique. Treatment consisted in vertical (right angle) extension twenty-three days; hip-spica cast twenty-two days; crutches two weeks. There is very little demonstrable shortening. A good functional result.

This case illustrates what nature will accomplish in individuals under fifteen years of age. It is the cause of the statement that non-operative measures are especially effectual in this age group, due to the growth of tissue.

Case 2.—(Middle third. Figure 8, a, b and c.) Male, aged 6. Auto injury. General examination is negative except for general bruising over body. *X*-ray shows a transverse fracture with ragged edges and overriding of fragments. Treatment consisted in Thomas splint with abduction after unsuccessful attempt at reduction under ether. Overhead traction was then used. After two weeks of closed reduction attempts, operation performed. Intervening muscle tissue, rotation of upper fragment noted. Ends of bone cleaned and fragments apposed corrected and jammed in this position. There was no internal fixation. A plaster spica was applied and patient was sent

home. As you will see, he has a good functional result without shortening. Compared with previous case, this one illustrates the "cabinet fit possible in open reduction."

Case 3.—(Lower third. Figure 9, a and b.) Male, aged 10. Auto injury. General examination showed patient in poor condition and not fit for operation. Treatment consisted in overhead extension one week; Thomas splint two weeks. Patient developed slough of toes necessitating amputation. In hospital two months, used crutches one week. Now limps and has pain in foot and behind knee. Examination shows a rather frail child. In the right leg there is marked atrophy of muscles. The foot is cold and blue. Flexion is complete. Extension painful (popliteal space) when forced to 180. There is about one inch shortening. The deformity shown on *x*-ray plate can be palpated.

This case illustrates the danger of backward dislocation of the lower fragment due to the pull of the gastrocnemius muscle, and the need of treatment with flexion of the knee.

Case 4.—(Middle third. Figure 10.) Patient is forty-one years old. This fracture occurred seventeen years ago. This was a splintered fracture. It was treated immediately by setting the bone and applying a hip-spica cast. This was removed six weeks later and non-union was noted. Open reduction was performed with fixation by silver wire. *X*-ray plate shows outward bowing, large callus and two silver wires in place. He has 1.5 inches shortening. He uses cane rather than elevation of heel. Complains of pain when weather changes and tires in the leg and has backache. There is marked compensatory tilting of pelvis. This case illustrates the deceptive nature of cast treatment. It also shows that open reduction is not always the method of choice even in late cases.

Case 5.—(Middle third. Figure 11.) A case of malunion of thirty-seven years duration with compensatory tilting of pelvis. Patient was treated with Thomas splint only. Pelvis is tilted. Patient comes to me complaining of backache of many years duration. *X*-ray

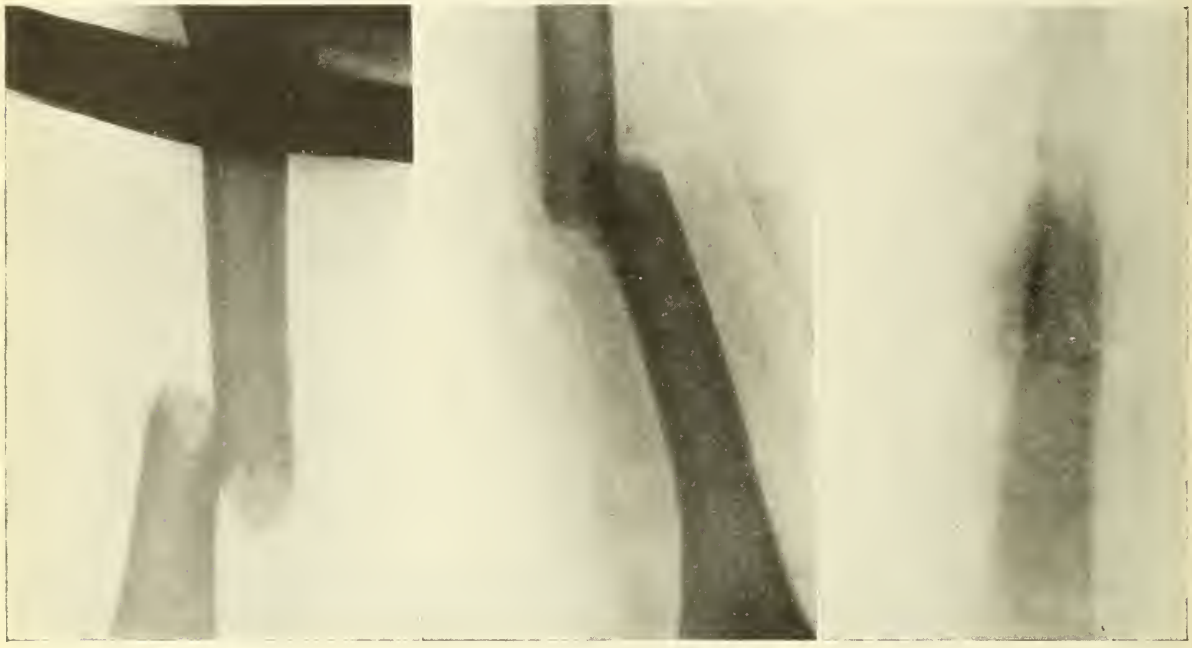

Fig. 8. Case 2. (a) After one week—Thomas splint. (b) After second week—overhead extension. (c) One month after open reduction.

Fig. 9. Case 3. (a) A-P plate. (b) Lateral view.

(A-P plate) shows vicious union of overlapped ends. This case demonstrates what has often been our experience with indirect skeletal traction. Thomas splint is not always the best method. It is painful, does not allow for free manipulation of the lower fragment and distorts the normal anterior bow of the femur.

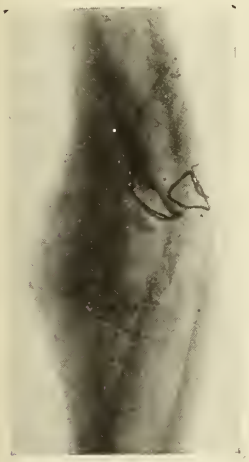

Fig. 10. Case 4. Seventeen years after open reduction.

Fig. 11. Case 5. Mal union after thirty-seve years.

SUMMARY

With increasing use of the *x*-ray in fracture work, both the profession and laity demand at least a fair anatomical result. A review of these cases shows that our treatment can be improved. It is known that a better functional result with decreased period of convalescence follows, if a good anatomical reposition is attained,—especially over the age of fifteen. It is not always possible to prevent unsatisfactory results by using any given treatment. However, it is well to know beforehand when to expect them and to recognize early the conditions which justify their prediction.

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LIGHT AND HEALTH*

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We know that plants need light as a source of energy in order to build up organic compounds. On the other hand, we know that certain kinds of bacteria are killed by light. Higher animals are able to live both with and without light but it is evident that light has a certain influence upon the function of the organs and upon the health of the animal. These statements also refer to human beings.

It has long been known that sunlight, as a rule, has a beneficial influence on the system and it seemed that it could be used to cure certain diseases. It was, however, not until fairly recently (at the end of the nineteenth century) that attempts were made to determine how light acts; and as yet we do not know very much about this action.

It seems evident that different kinds of light should have different influences and it is unfortunate that a thorough study of the effect from light of different wave lengths has not yet been made. We can illustrate the situation in the following way. Suppose we had found a deposit of a great number of inorganic salts well mixed together, salts containing Na, K, Ca, Fe, Al, Mg, Pb, Cl, I, Br, P, S, etc. We used this mixture and found it beneficial for certain individuals and that it sometimes had a curative action on certain diseases. We would, however, not find a quantitative relation (the salts not being uniformly mixed). Naturally we would get different opinions about the action of this mixture. Some doctors would find a greatly beneficial effect in a small group of cases; others would find no effect at all, and still others might find that the mixture produced untoward effects and was dangerous. To a certain extent we have this condition prevailing at mineral springs. Each spring has, however, a fairly constant concentration of salts.

It was not difficult for the doctors to learn that each substance had to be considered separately and it has been fairly well established what effects on the human system the different elements

*From the Cancer Institute and the Department of Physiology, University of Minnesota. Read by invitation before the Medical Staff of the Lymanhurst School, Dec. 16, 1926.

have and how much of a dose is required in a certain case. Why should not a similar consideration be given to light? It is true that the physician of today is better educated in chemistry than in physics and that he therefore understands and appreciates the underlying chemical principles better than the physical principles. If, however, he wants to use physical agencies such as light, does it not seem a necessary requirement that he should study the fundamental principles at first?

We consider light to be electromagnetic waves. That sounds perhaps discouraging and it may be easier to think of it as waves in a substance which is evenly distributed throughout the universe, the ether. We can compare these waves with waves produced on a water surface when a stone is dropped in quiet water. Troughs and ridges, or, in other words, waves, then spread out over the surface transversal to the direction in which the stone moved. The light waves are much shorter and move with much greater velocity than the water waves. They can vibrate in all directions which are at right angles to the direction of progression. If they do not vibrate in all these directions we call them polarized and thus we have to distinguish between unpolarized and polarized light. Some experiments thus far carried out seem to indicate that polarized light has more effect on living cells than unpolarized light but more experiments are required to settle this question. I might mention that the light coming from the moon is polarized. We use polarized light to determine certain properties of organic materials, *e.g.*, the rotation of sugars. In the following we will not consider polarization.

If waves are sent out from a vibrator, one wave is produced during one complete vibration. The number of vibrations during one second times the wave length therefore gives the distance the wave has proceeded during one second. The number of vibrations per second we call the frequency. Therefore we find that the velocity of the wave is equal to the frequency times the wave length ($c = \lambda\nu$ where c is the velocity of the light, λ the wave length and ν the frequency). All electromagnetic waves have a velocity of approximately 300,000 km. per second (186,000 miles) in vacuum. If we know the frequency we can easily calculate the wave length and vice versa. The wave length or the frequency is the most important characteristic of the wave. In Fig. I you will find the different kinds of electromagnetic waves which have been studied. The visible rays stretch approximately from 4000 to 8000 Å (1 mm. = 1000μ = 1,000,000 mμ = 10,000,000 Å). Violet has the shortest wave length. With increasing wave length the color changes to indigo, blue, green, yellow, orange and red. Beyond red we have the invisible infra-red, and still further out, the Hertzian waves which continue into the wireless waves. On the other side of the visible region we have the ultra-violet and still further out, the *x*-rays and the γ-rays from the radioactive elements. As a continuation of these we have the cosmic rays which now are being investigated by Kohlhoerster, A. Millikan and others. There is now practically no gap in the chain: almost every wave length has been registered by means of spectroscopes of different constructions except for the cosmic rays and the wireless rays, which have been studied by other means. You will notice how different the effects are from waves belonging to the different spectral regions.

We are here mainly interested in the visible, the infra-red and the ultra-violet radiations. It seems evident that in order to produce any effect the rays have to be absorbed, or, in other words, the incoming radiation energy must be changed into other forms of energy. The primary effect is produced where the absorption takes place. I will therefore refer to some absorption measurements which indicate how deeply the rays penetrate into the body. The few quantitative measurements which I have been able to find in the literature as well as some experiments carried out by M. Reinhard and myself, agree in that respect that the red rays show greatest penetration. However, only about twenty per cent of the red rays striking the skin perpendicularly, penetrate it (2.5 mm. thick, slightly pigmented skin). Some few millimeters under the skin the intensity drops down to one per cent, and one centimeter under the surface of the skin the intensity should not be over 0.2 per cent. This refers to the most penetrating of the light rays. Ultra-violet rays of the wave lengths 3660 Å are absorbed to such an extent that only about 0.000003 per cent penetrates the skin (2.5 mm. thick). The amount of light radiation absorbed by deep-seated tissue and by internal organs is

thousands or even millions times smaller than the amount absorbed by the dermal layer. It seems therefore probable that the primary effect of light radiation (whatever the wave length may be) is produced in the dermal layer and immediately adjacent tissues. Chemical products may then be picked up there and carried round with the blood. Bovie states that protozoa are very sensitive to ultra-violet radiation and are killed by a short exposure. If, however, very short ultra-violet rays are used, the effect is not so marked, evidently because practically all the radiation is absorbed by the protoplasm of the individual protozoan so that it does not reach the nucleus. This kind of radiation has probably no effect on us as it ought to be completely absorbed by the epidermis.

The skin is quite inhomogeneous and it is therefore difficult to determine quantitatively how much it absorbs. It is much easier to determine the absorption by blood, which shows several absorption bands. By an absorption band is meant that more is absorbed in a certain region of the spectrum than on either side of this region. The hemoglobin is responsible for the absorption bands in the visible part of the spectrum while the proteins (albumin and globulin) are responsible for a strong absorption band in the ultra-violet. We have been able to prove that this absorption takes place in certain parts of the protein molecule, viz., in the amino acids containing a benzine ring (mainly tyrosine and tryptophane). We might expect that light which is absorbed specifically by certain molecules has a selective action. This has not been proven as yet, but we have an indication in the tanning of the skin. Hausser and Vahle exposed skin to light which had been spread out to a spectrum and found that tanning was produced only on the part of the skin which had received light of wave lengths round 3000 Å with maximum effect between 2980 and 3010 Å. We might therefore assume that the pigment layer has an absorption band in this region but that has not been proven yet.

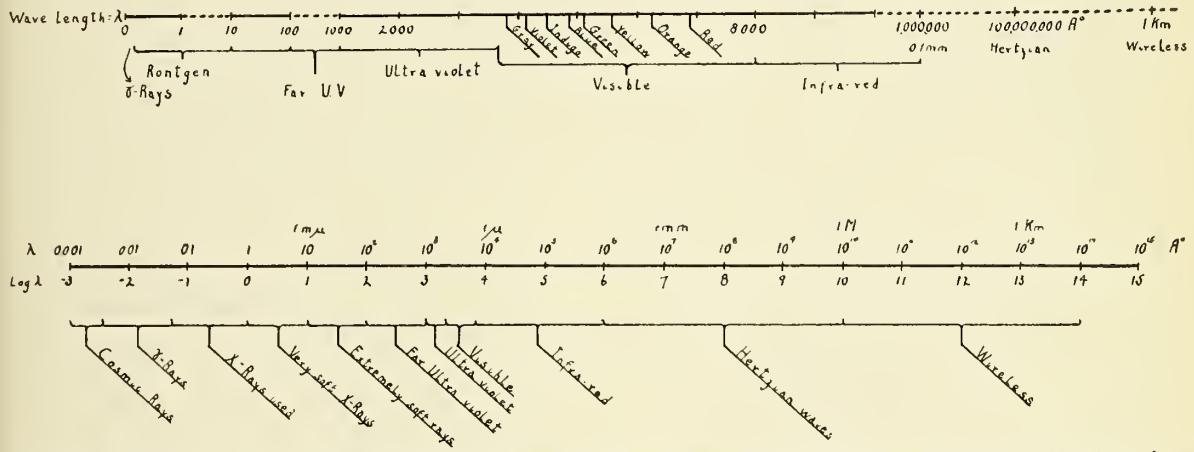

Fig 1. The upper chart shows the different kinds of electromagnetic radiations and the wave length regions covered by them. The lower chart shows the same relation in a logarithmic scale which gives a better comparison between the relative extent of the different regions.

1 km = 1000 m. = 1,000,000 mm. = 10^6 mm.
1 mm. = 1000 μ = 1,000,000 mμ = 10,000,000 Å
1 km = 10^{13} Å 1 mm. = 10^7 Å

Not much has been established concerning the effects the different regions of the light spectrum produce in the body. That some chemical changes are produced by means of ultra-violet radiation is evident. In rachitic animals and children the free phosphorus content of the blood is increased, and some authors maintain that the calcium content also is increased.

An investigation by Carl Sonne at the Finsen Institute in Copenhagen, which I consider important, refers to heat effect of the radiation. He measured the temperature at the skin surface and at a certain depth (about 3 mm. under the skin) with thermo-couples and found that when he radiated this part of the body with visible rays, the temperature was higher some millimeters under the skin than at its surface. When he used infra-red rays, the temperature was highest on the surface of the skin. It is evident that

ultra-violet radiation will produce the highest temperature in the upper layer of the skin where most of it is absorbed. He further found that with visible radiation twice as much energy could be given as with infra-red radiation, and that the temperature thus could be raised to about 43° C. 3 mm. under the skin. Forty-three degrees centigrade is the average value he obtained in seven experiments with laboratory workers. Sonne assumes that the temperature of the blood in the skin capillaries is raised to this temperature, whereas the temperature of the tissues below is normal. He therefore considers that the visible radiation produces the "good" effects of fever without producing the harmful effects. As good effects, are counted the inciting effects upon the oxidation and the formation of antibodies and increased destruction of toxins. He refers to experiments which show that tetanolysin is debilitated seventy-eight times faster at 42° C. than at 37° C. Similar relations seem to hold for the destruction of other toxins. Sonne also made the following experiments. He injected thirty-eight mice subcutaneously with a minimum lethal dose of diphtheria toxin and gave half of them a light bath lasting two hours immediately after the injection. The unradiated animals had an average life-time of three and one-half days and every one died within five and one-half days. Five of the radiated animals lived thirty days or more and the others had an average life-time of 5.3 days. It seems reasonable to assume that part of the toxin was destroyed due to the raised temperature of the blood while it circulated through the skin capillaries. The importance of the temperature rise some millimeters under the skin may be considerable, but naturally it is difficult to prove definitely that it is the main factor.

The bactericidal action of radiation is well known. It is mainly the ultra-violet rays which are effective and the action is, of course, very superficial. An ulcer can usually be sterilized only on the surface, and bacteria hidden by dead cells or protruding tissue may be saved from destruction. Intense radiation will also have destructive action on tissue cells. A superficial layer of tissue is, for instance, killed with the Finsen treatment of lupus.

The influence of light on hemoglobin is evidently of importance in metabolism. Light and especially ultra-violet light, increases the speed of reaction, both the oxidation in the presence of oxygen and the reduction in its absence (Hasselbalch).

We have so far considered mainly the direct action of the radiation. It seems to me that it is very important in this stage of light therapy that we learn more about the primary action and that we determine which particular wave lengths are responsible for the action. We also must keep in mind that it is quite possible that one wave length may have just the opposite effect of another wave length. If both are present at the same time, no effect will be produced.

Many indirect effects are produced by light radiation. For instance, respiration is influenced; breathing becomes slower and deeper. The minute volume of the right side of the heart is increased (Hasselbalch). The production of erythrocytes, blood platelets and leukocytes is influenced.

The curative action of light in rachitic children and animals and the prevention of rachitis in animals fed on vitamin-deficient food are quite well established. It seems to be proven that it is ultra-violet light of wave lengths between 2800 and 4000 Å which is effective in this respect. Of interest is also that similar protection against rickets can be obtained by radiating the food (cholesterol) instead of the animals, as experiments of Steenbock, Hess and others, seem to establish.

When we consider the effects of radiation mentioned it is evident that the influence of light upon the human body is very important. We must consider also that a great amount of exposure to the sun's radiation has been the normal condition for human beings for thousands of years and therefore we must expect that the body requires radiation in order to function with maximum efficiency.

It seems probable that the sun is the best light source for a healthy person who wants to keep well, but it may be that better light sources can be found for treatment of certain diseases. If we determine the wave lengths which have a beneficial action in a certain disease, then it should be fairly easy to find a light source which gives a proper amount of these particular rays.

The sunlight contains all kinds of rays from far out in the infra-red down to about 2900 Å

in the ultra-violet with a maximum intensity at about 5000 Å. This radiation is difficult to duplicate. The carbon arc comes closer to an imitation of the sunlight than any other artificial source. It can indeed be constructed so that its radiation approximates sunlight quite closely. For this purpose a very intense direct current is required, say 150 amperes, and a great current density. The positive crater must be brought to an extremely high temperature. It also seems necessary to have the carbons impregnated with certain salts. The radiation coming from the crater should be used.

The mercury quartz lamp gives a spectrum which consists mainly of a series of lines with great intensity. Some of these lines lie in the ultra-violet and this part of the radiation is relatively intense. The mercury quartz lamp is therefore a good source for ultra-violet radiation and is especially useful for treatment of rickets and certain skin diseases.

An ordinary electric bulb does not give off any ultra-violet radiation. It also must be remembered that the ultra-violet radiation does not penetrate ordinary glass. There are some substitutes for glass windows in the market which, it is claimed, let through the ultra-violet radiation. I do not know how good they are as I have not seen reports of reliable tests except for one English glass (vitaglass) which is fairly good. The Corning Glass Works have produced a glass which is very transparent for ultra-violet light. As yet this glass has only been made in small pieces with rough surfaces, but it undoubtedly soon will be made in satisfactory shape so that it can be used instead of ordinary window glass.

Heliotherapy is becoming more and more recognized. Very good results have been obtained with it in surgical tuberculosis both by Rollier and others. About eighty per cent of the patients treated have been cured. It must be remembered that the radiation received from the sun varies very much, both quantitatively and qualitatively. The ultra-violet part of the radiation is absorbed to a certain extent by the air. This part of the radiation is therefore much more intense at high than at low altitudes. At the seashore the radiation is increased because of the reflection from the water. The shortest wave length that reaches the surface of the earth is about 2900 Å. These short waves reach the surface only at certain parts of the globe and only at certain times of the year and the day. The sun has to be fairly high in the sky, otherwise the rays have so much air to pass through that an essential part of the ultra-violet radiation is absorbed. The rule that only a small part of the body should be exposed for a short time during the first sun bath and that the area should be increased from day to day and also the time for the previously treated area, is good. It seems, however, at least as important that the intensity and spectral distribution of the radiation be measured during treatment. These factors may change very much from hour to hour and from day to day. The temperature, the wind velocity and the humidity also should be measured, as the effect of the bath depends to a great extent upon these physical conditions and they may be such that the bath will do more harm than good.

I have already mentioned that ordinary window glass shuts out the ultra-violet radiation, but that it soon may be possible to get a new kind (Corning 980 A) which will let through practically all the ultra-violet radiation present in the sunlight and sun baths can thus be given behind a window.

Carbon arc light can be used to great advantage at places and at times where or when the solar radiation is insufficient. Reyn and Ernst, from the Finsen Institute, reported some remarkable results with their carbon arc lamps in 1919, healing eighty-four per cent of the patients treated (Strahlentherapie X, p. 314), and Reyn, Collin and Christensen described last year in Acta Radiologica (IV, p. 1) the technic and armamentarium they used. O'Brien at the J. N. Adams Memorial Hospital, Perrysburg, N. Y., has recently constructed a very powerful carbon arc lamp (150 amperes) which is in use there for treatment of patients. The indications are that just about as good results will be obtained with help of this lamp as with the sun. The same precautions must be taken with respect to temperature, ventilation, humidty and the reaction of the individual patient as when sun baths are given. It may be possible some day to construct a lamp that is still more effective, but we will have to know first which wave length is most important for the treatment.

Note: Since this paper was read several articles have appeared in print giving measurements on the transparency to ultraviolet light of substitutes for ordinary window glass and on the spectral distribution of light from certain carbon arc lamps.

INFECTIOUS MONONUCLEOSIS

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Saint Paul

Infectious mononucleosis is characterized by adenopathy, splenic enlargement, fever, leukocytosis, a pronounced lymphocytosis, and the presence of abnormal mononuclear lymphoid cells in the circulating blood. The condition resembles in many respects the early stages of lymphatic leukemia, but is distinguished from leukemia by a benign course terminating in recovery and by the type of lymphoid cell which dominates the blood picture. Though of comparatively rare occurrence, infectious mononucleosis forms a symptom-complex of considerable importance, especially in its relation to, and differentiation from, the leukemias.

So closely may the clinical features, total leukocyte counts, and the height of the lymphocytosis in infectious mononucleosis and acute lymphatic leukemia resemble each other, that without a careful cytological study of the blood early differentiation may be impossible.

Case 1.—G. H., white female, single, aged 23, seen with Dr. S. E. Stinnette on April 30, 1925, complaining of swollen glands of the neck, fever, bleeding from the gums, and weakness. Except for measles and pertussis in childhood, and tonsillectomy in 1923, her past history was negative. The family history was unimportant. The present illness had started about ten days previously. She had felt weak and tired, the glands of the neck had become swollen and tender, the gums bled easily, and there had been an evening rise of temperature averaging 100°. There had also been a dull ache in the upper abdomen, and the bowels were constipated.

Physical examination showed a well nourished young woman. The skin and mucous membranes were pale. The gums were swollen, spongy, and bled on the slightest pressure. The cervical, submaxillary and axillary glands were considerably enlarged, soft, and tender. The spleen was enlarged, the lower pole descending 5 cm. below the costal margin. The liver was also enlarged, its lower border being 9 cm. below the costal margin. Remainder of physical examination negative. Temperature 100°. The blood examination on this date was as follows: Hemoglobin 70 per cent, red blood cells 4,460,000, leukocytes 21,000, polymorphonuclears 4 per cent, lymphocytes* 96 per cent. Other laboratory findings were negative.

The case at this stage of the observation, with bleeding gums, adenopathy, splenic enlargement, fever, a leukocytosis of 21,000, and a lymphocytosis of 96 per cent, might well, therefore, have been considered acute lymphatic leukemia with a fatal outcome to be faced. A careful cytological study of the blood, however, revealed that the prevailing lymphocyte, though not of the type found in normal blood (see colored plate), was by no means the undifferentiated immature lymphoid cell which characterizes acute lymphatic leukemia. This very important detail settled at once a vital question for this young woman, placing her in the group of infectious mononucleoses, and justifying a prediction of complete recovery.

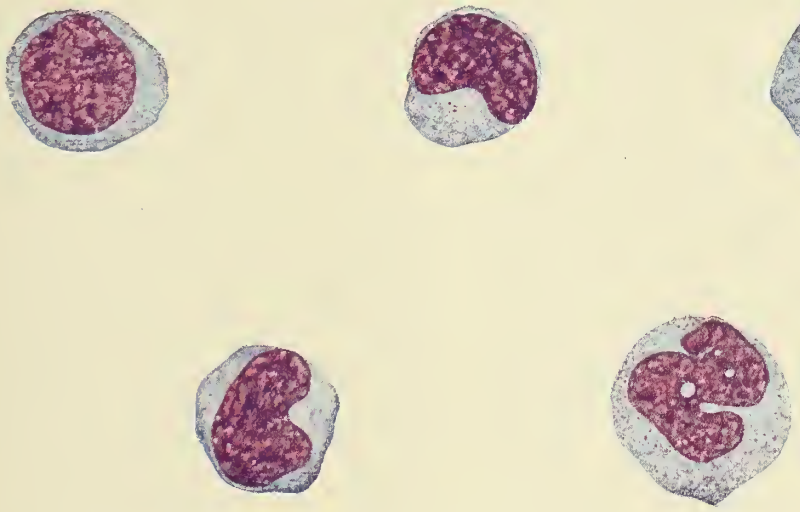
The patient was admitted to the Miller Hospital on May 1, 1925. The spleen and liver gradually receded, and by the end of the third week they could barely be felt at the costal margin. The temperature rose daily to 100° or 101° for a month, after which it did not exceed 99°. The oozing from the gums entirely ceased in the course of a month. The adenopathy remained unchanged until the fourth week, when there was an increase in the size of the cervical and axillary glands as well as the appearance of a new glandular swelling, the size of a bean and very tender, at the angle of the jaw. The lymphocytes, which had been dropping, again showed a rise on this occasion. Following this exacerbation there was a gradual subsidence of the adenopathy. By the eighth week the glands were very much smaller, the spleen and liver could no longer be felt, the gums were firm, and the patient felt entirely recovered. Three months after the onset of the illness, although the lymphocytes were still somewhat elevated, the adenopathy had entirely disappeared, the spleen was not palpable, and the patient had gained seven pounds in weight.

The blood counts in this case from the second day in hospital until the date of the last observation three months later, are shown by curves in Figure 1. It will be noted that the total number of leukocytes dropped from 21,000 (the count on the day before entrance to hospital) to 8,500 in five days, and from then on continued to decline until they reached the low point of 2000 by the end of the fourth week, after which they slowly returned to a normal number. The percentage of the lymphoid cells dropped very slowly. At the end of the first week when the total leukocyte count was 8,000, lymphocytes constituted 86 per cent of them. In the fourth week the lymphocytes reached their lowest level, 40 per cent, and thereafter fluctuated between 45 and 60 per cent. As the hemoglobin and red cell curves show, no anemia developed.

This case particularly emphasizes the importance of the detailed cytologic study of the blood pointed out by Downey,[1] whose excellent contribution to the subject in 1923 cleared up much of the confusion and difficulty which had hitherto

*The term "lymphocyte" in this and subsequent blood examinations includes all lymphoid cells.

occurred in separating infectious mononucleosis from leukemia. Cabot,[2] in 1913, in reporting four cases of lymphocytosis due to acute infection, had observed that the "lymphocytosis was so pronounced as to suggest lymphatic leukemia." Hall's[3] case in 1915, which he considered an acute leukemia with recovery, may well have been an example of infectious mononucleosis. Cross,[4] in 1922, in reporting three cases of "conditions simulating an acute benign leukemia" believed that "the clinical course of the affection alone establishes its true character." Similarly, Bloedorn and Houghton,[5] Sprunt and Evans,[6] and others have been impressed with the difficulty which may arise, especially clinically, in distinguishing infectious mononucleosis from early lymphatic leukemia. Downey[1] is convinced that failure to recognize the significant importance of the atypical mononuclear lymphoid cell, which is the outstanding characteristic of the blood picture in infectious mononucleosis, has been responsible for most of the diagnostic difficulties. The following case of infectious mononucleosis illustrates the difficulty which may be encountered in the diagnosis, especially at the time of the first blood examination:



Types of abnormal lymphoid cells seen in infectious mononucleosis, from the blood of Case 1. These cells are larger than normal lymphocytes, their cytoplasm is quite deeply basophilic and often vacuolated, the nuclei are frequently eccentrically placed and are usually indented or lobulated, the nuclear chromatin forms a heavy network, and nucleoli are rare.

Case 2.—M. B., white female, aged 18, was first seen on August 3, 1921, complaining of fatigue, weakness, soreness of the throat, and fever. Her past history was negative except for frequent "colds." The family history was unimportant. Her present symptoms had started two weeks previously. She had felt tired and weak and had fainted on two occasions. There had been some soreness of the throat, and for a week she had had an evening temperature averaging 100°.

Physical examination revealed a well nourished young woman; skin and mucous membranes pale; cervical glands swollen and tender; throat slightly injected; spleen palpable at costal margin; temperature 99.4°. The blood examination on this date was as follows: hemoglobin 80 per cent, red blood cells 4,310,000, leukocytes 14,000, polymorphonuclears 13 per cent, lymphocytes 84 per cent, large mononuclears 3 per cent. The lymphocytes were reported to be "largely young irritation forms suggesting rapid formation," thus occasioning grave concern that the case might be one of early leukemia. A further careful cytological study of the blood, however, showed that although the prevailing lymphoid cells were abnormal they were not the immature cells of acute leukemia. The other laboratory examinations were negative.

The fever in this case persisted for another five days, averaging 100° in the evening. At the end of a week the spleen was still palpable but the cervical adenopathy was subsiding and the lymphocytes had dropped to 40 per cent. One month later the cervical adenopathy had entirely disappeared, there was no fever, the spleen was no longer palpable, and the lymphocytes had dropped to 28 per cent (Fig. 2).

This case is a very typical one of infectious mononucleosis. The onset was associated with a mild throat infection, while cervical adenopathy, splenic enlargement, fever, a moderate leukocytosis, and a marked lymphocytosis of a characteristic type were the outstanding features. The disease ended in complete recovery after a course of four weeks. Four years later an ex-

amination of this patient showed no adenopathy, the spleen was not palpable and the blood picture was entirely normal.

The next case of infectious mononucleosis is very similar to the preceding one, but with a

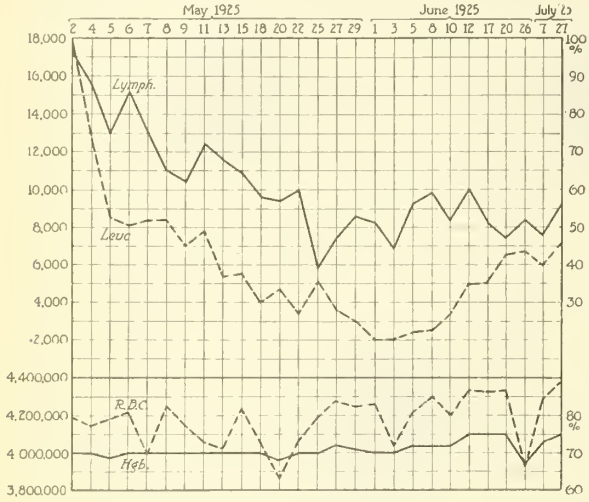


Fig. 1. Blood counts in Case 1.

very generalized adenopathy and a higher fever it was even more suggestive clinically of acute leukemia:

Case 3.—E. P., white male, single, aged 18, was referred to me on June 23, 1922, because of swollen, painful glands, and fever. Except for tonsillectomy ten years before, his past history was negative. The family history was unimportant. His present illness had started ten days previously with tender, swollen glands of the neck, in the axillæ, and in the groins. The adenopathy was accompanied by fever, which for the past four days had ranged from 100° to 102.5°. He had had a moderate soreness of the throat with slight headache, loss of appetite and general malaise.

Physical examination revealed a well nourished young man. The throat was somewhat reddened and injected. The cervical, axillary, epitrochlear, and inguinal glands were all considerably enlarged, firm and tender. The spleen was readily palpable at the costal margin. Temperature 101°. Remainder of physical examination negative. The blood on this date (Fig. 3) was as follows: hemoglobin 78 per cent, red blood cells 4,480,000, leukocytes 16,800, polymorphonuclears 33 per cent, lymphocytes 67 per cent. Other laboratory findings negative.

As the prevailing lymphocytes in this case, though abnormal, were not undifferentiated immature cells, acute lymphatic leukemia was ruled out and a favorable prognosis given. Complete recovery took place in the course of four weeks, with a gradual subsidence of the adenopathy, fever and other symptoms. On examination one year later there was no adenopathy, the spleen was not palpable and the blood was normal.

The following case is particularly interesting because of its long duration, resembling those reported by Herman and Bass[7] in children, in which the adenopathy and lymphocytosis persisted for several months, thereby raising the

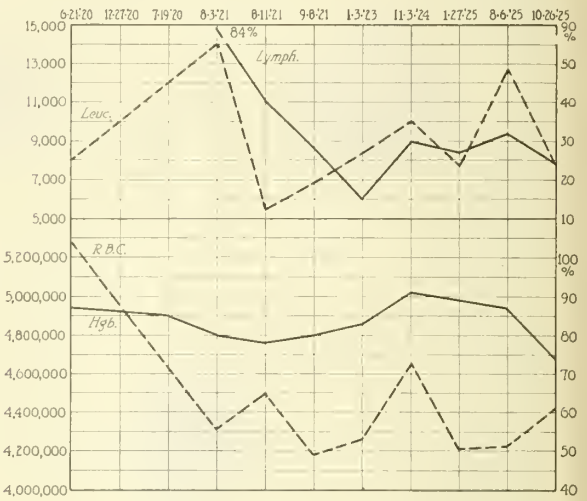


Fig. 2. Blood counts in Case 2.

question of a chronic lymphatic leukemia. The lymphoid elements in this patient's blood showed departures from the normal typical of infectious mononucleosis (see plate) but at no time suggestive of possible leukemic features:

Case 4.—H. V. B., white female, aged 20, referred on December 29, 1925, because of unexplained fever. She had had measles, pertussis and scarlet fever in childhood, and influenza in 1918. Her tonsils had been removed in 1923. The family history was unimportant. Her present illness was of about a month's duration. She had been losing weight, was easily fatigued, had had repeated "head colds" and every evening had a temperature of 100 to 101°. She, however, had not felt ill enough at any time to discontinue her studies at school.

Physical examination showed a well nourished young woman. The skin and mucous membranes were somewhat pale. There was a slight enlargement of the cervical lymph glands. The spleen was enlarged, its lower pole being palpable 4 cm. below the costal margin. The remainder of the physical examination was negative. X-rays of the chest were negative. The blood examination was as follows: hemoglobin 74 per cent, red blood cells 4,000,000, white blood cells 9,450, polymorphonuclears 27 per cent, lymphocytes 73 per cent. Among the lymphocytes were a moderate number of large, atypical cells. Other laboratory examinations were negative. She continued to run an evening temperature of 99.5 to 100° for approximately two months, after which it remained normal. The spleen gradually receded until it was no longer palpable. There were no further glandular enlargements,

and the cervical adenopathy gradually subsided. The course of the lymphocytosis is shown in Fig. 4.

As is well known, lymphocytosis is not an uncommon finding in the blood of apparently normal children. Furthermore, in childhood many

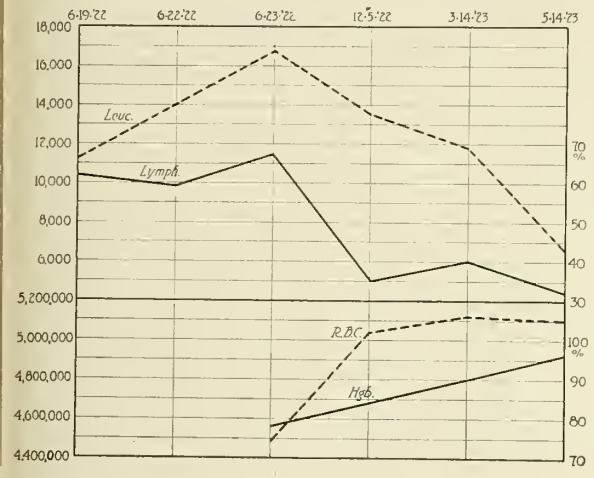


Fig. 3. Blood counts in Case 3.

conditions may be accompanied by a lymphocytosis, notably pertussis, congenital syphilis, tuberculosis, typhoid, rickets, scurvy, varicella, etc. The following case is cited for purposes of comparison with the four preceding cases to show that adenopathy and lymphocytosis do not alone constitute a diagnosis of infectious mononucleosis:

Case 5.—M. H., white female child, aged 7, was brought to the Miller Clinic for an examination July 8, 1924. Her tonsils had been removed in 1921. She had had measles and pertussis in the spring of 1924. Her father has syphilis, for which he is undergoing treatment. Her mother is well, has had no miscarriages, and no other pregnancies. The child has always been healthy but was born prematurely at eight months and as a baby was given mercury rubs.

Physical examination showed a well developed, healthy appearing child. The cervical, axillary and inguinal glands were all considerably enlarged, firm, not tender. The liver edge was just palpable. Examination otherwise was negative. There was no fever. The Wassermann was negative. The blood at the first examination was as follows: hemoglobin 75 per cent, red cells 4,120,000, leukocytes 8,500, polymorphonuclears 51 per cent, lymphocytes 47 per cent, large mononuclears 2 per cent.

Ten months later (May, 1925) the child was again brought to the clinic. She had been very well in the interval. The cervical, axillary and inguinal glands were still enlarged. The liver was palpable at the costal margin. Other physical findings were negative. There was no fever. The Wassermann was again negative. The blood now showed a pronounced lymphocytosis, as follows: hemoglobin 71 per cent, red cells 4,570,000, leukocytes 7,400, polymorphonuclears 15 per cent, lymphocytes 84 per cent.

Ten months later (March, 1926) the adenopathy had subsided, except for a very slight enlargement of the posterior cervical glands, and the lymphocytes had

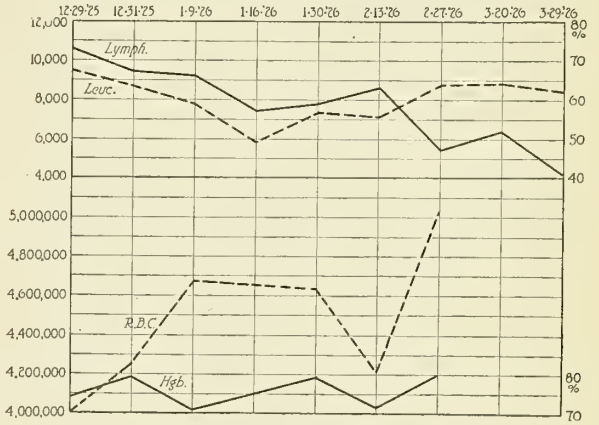


Fig. 4. Blood counts in Case 4.

dropped to 50 per cent of the total leukocyte count (Fig. 5).

In this case infectious mononucleosis, as well as chronic lymphatic leukemia, can of course be readily ruled out, as the lymphoid cells through-

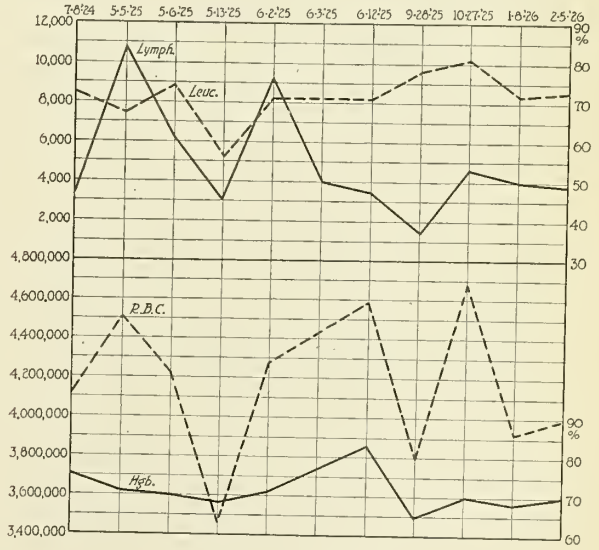


Fig. 5. Bloor counts in Case 5.

out an observation extending over a period of almost two years never showed any departure morphologically from the large and small lymphocytes of normal blood and, furthermore, there had been no leukocytosis, no fever, nor any enlargement of the spleen. The exact cause of the lymphocytosis and adenopathy in this child is obscure without proof of inherited syphilis and the

improbability of paternal transmission with no evidence of maternal infection.

The following case of acute lymphatic leukemia is also presented for purposes of contrast with the four cases of infectious mononucleosis, and to again emphasize the importance of the morphologic study of the blood in the differential diagnosis:

Case 6.—W. M., a white male, married, aged 28, came to the Miller Clinic on January 4, 1926, complaining of aching in the legs and fatigue. Except for measles and pertussis in childhood his past history was negative. The family history was unimportant. Seven weeks previously he had fallen ten feet from a scaffold, but was not rendered unconscious and did not have enough pain to prevent him from going on with his work. About a week later he began to be troubled with generalized aching pains in the legs and through the muscles of the neck. He has felt tired and rather weak. His appetite has been poor, bowels constipated, and he has lost weight. He has had several mild nosebleeds, but no bleeding from any other source. For the last two weeks he has had an evening rise of temperature, on one or two occasions reaching as high as 102°.

Physical examination showed a somewhat undernourished male. The skin and mucous membranes were slightly pale. His tonsils were injected. The cervical, inguinal and femoral glands were moderately enlarged, firm, not tender. The spleen and liver were not palpable. Temperature 99.6°. Remainder of the physical examination was negative. The blood count was as follows: hemoglobin 70 per cent, red blood cells 4,060,000, leukocytes 8,150, polymorphonuclears 18 per cent, lymphocytes 82 per cent.

It is to be noted in this case that at the time of the first observation there was no anemia, no leukocytosis, and that, although the increase in lymphocytes was marked, the lymphocytosis was not as high as in cases 1 and 2 of infectious mononucleosis. However, a morphologic study of the prevailing lymphocytes showed them to be the immature, undifferentiated type characteristic of acute lymphatic leukemia, thereby at once sealing the fate of this young man. From then on the case ran the usual course of this disease, with death in ten weeks (Fig. 6).

The term "infectious mononucleosis" is not an altogether satisfactory one, as although the condition presents all the features of an infection, its infectious nature is yet to be proven, and furthermore, a mononucleosis (lymphocytosis) may occur, as has been noted, in a number of infections, especially in childhood. Infectious mononucleosis, however, has been the name most generally adopted to describe the symptom-complex since Sprunt and Evans[6] employed it in 1920. In 1889 Pfeiffer[8] under the term "glandular fever" described an epidemic of adenitis with fever, in children. There followed a number of reports on glandular fever, notably the epidemic

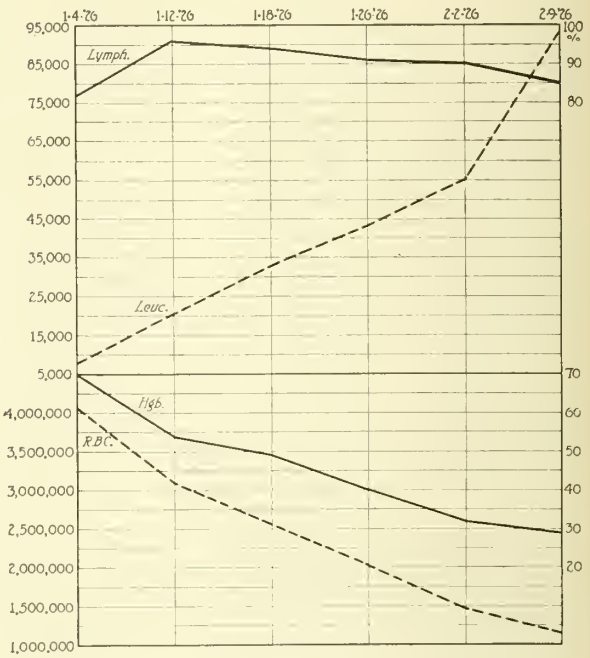


Fig. 6. Blood counts in Case 6.

described in 1896 by West.[9] Tidy and Morley[10] in 1921, after an analysis of the reported cases of glandular fever, concluded they were identical with infectious mononucleosis but because of the absence of complete blood studies in the earlier reports, actual proof that the two conditions were the same was lacking. In 1925 Bass and Herman[7] concluded that infectious mononucleosis is a definite syndrome "closely related to glandular fever." Other names have been used to describe the condition; thus Bloedorn and Houghton[5] suggested "acute benign lymphoblastosis," while Downey and McKinlay[1] designated it "acute lymphadenosis." This multiplicity of terms is unfortunate, and were it not for the lack of proof that the condition is the same as glandular fever, a continuance of the older name would be simpler. However, under the circumstances, it is probably advisable, especially for purposes of ready reference, to group all cases under "infectious mononucleosis."

The key to the diagnosis of infectious mononucleosis lies in the recognition of the pathological lymphoid cells which give to the blood in this

condition its distinctive feature. These cells have been described by Downey,[1] Longcope,[11] and others.[5, 6] They were present in large numbers in cases 1, 2 and 3, and to a less extent in case 4. The plate accompanying this article was made from the blood of case 1 and shows typical representative cells of infectious mononucleosis. These cells bear no relation to the large mononuclears of normal blood. They are very rarely, or never, seen in the blood of normal persons and are not a feature of the simple lymphocytoses of childhood, thus they were not present in the case of lymphocytosis cited in a child (Case 5). The predominating cell in infectious mononucleosis varies somewhat in size but the majority are considerably larger than normal large lymphocytes. The cytoplasm of the cell is quite deeply basophilic, usually fairly liberal in amount, and often vacuolated. The nuclei are often placed eccentrically in the cell and are usually indented or lobulated. The nuclear chromatin is dense and forms quite a heavy network. Nucleoli are rare. Downey[1] lays special emphasis on the "coarse network of heavy strands and masses" of the nuclear chromatin in these cells, which distinguish them sharply from the cells of acute lymphatic leukemia with the "diffuse sieve-like arrangement of chromatin" in their nuclei and the presence of nucleoli.

CONCLUSIONS

(1) Infectious mononucleosis (glandular fever) is a distinct clinical entity which runs a benign course terminating in recovery.

(2) Four cases of infectious mononucleosis in young adults are presented with, for purposes of comparison, a case of simple lymphocytosis and a case of acute lymphatic leukemia.

(3) Because of the similarity which may exist, especially at the onset, in the clinical features and blood counts in infectious mononucleosis and acute lymphatic leukemia, confusion may occur if a diagnosis is based solely on these findings.

(4) The key to the diagnosis of infectious mononucleosis is the abnormal lymphoid cell which dominates the blood picture.

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INTERNATIONAL HEALTH INSTITUTE

During the past few months the medical profession has been flooded with letters from the "International Health Institute, Inc.," 2061 Broadway, New York City. According to its "sales talk," the International Health Institute purposes to sell to the public a urinalysis and periodic physical examination service "supplemented with a complete course in body-building and rules of right living." While this is the nominal *raison d'etre* of the concern, evidence is accumulating to confirm the suspicion that the International Health Institute, Inc., is primarily a promotion scheme. Letters are sent to physicians stating that the "Institute" desires to establish "a resident physician and member of our Advisory and Hygiene Reference Board"; invites the physician to join and to purchase stock. It is stated that the first source of income is the service that is to be recommended by the International Health Institute in selling to the public a periodic physical examination and urinalysis, for which the institute will charge $37.50, but it is explained that a greater opportunity for financial betterment will come from the activities of the International Health Institute in recommending to the lay subscribers that they use certain health foods; certain "approved exercising devices"; certain "hygienic appliances"; and certain books all of which the institute will sell. (Jour. A. M. A. April 30, 1927, p. 1435.)

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ABBOTT LABORATORIES
Neonal

CERTIFIED LABORATORY PRODUCTS
Ethylene-C. L. P.

CUTTER LABORATORY
Alkali Weed Pollen Extract-Cutter
All Scale Pollen Extract-Cutter
Box Elder Pollen Extract-Cutter
Burning Bush Pollen Extract-Cutter
Corn Pollen Extract-Cutter
Foxtail Pollen Extract-Cutter
Mountain Cedar Pollen Extract-Cutter
Tumbleweed Pollen Extract-Cutter
Western Water Hemp Pollen Extract-Cutter

FAIRCHILD BROS. & FOSTER
B. Acidophilus Milk-Fairchild

HORLICK'S MALTED MILK CORPORATION
Horlick's Maltose-Dextrin Milk Modifier

H. K. MULFORD CO.
Lamb's Quarters Pollen Extract (Glycero-Saline)-Mulford
Ragweed Pollen Extract (Glycero-Saline)-Mulford
Timothy Pollen Extract (Glycero-Saline)-Mulford
Wormwood Pollen Extract (Glycero-Saline)-Mulford

PARKE, DAVIS & CO.
Alfalfa Pollen Protein Extract Diagnostic-P.D. & Co.
Kidney Bean Protein Extract-P. D. & Co.
Typhoid Vaccine (Prophylactic)
Typhoid-Paratyphoid Vaccine (Prophylactic)

E. R. SQUIBB & SONS
Ovarian Hormone-Squibb

SWAN-MYERS CO.
Ampoules Ephedrine Hydrochloride - Swan - Myers, 0.05 Gm., 1 c.c.
Capsules Ephedrine Hydrochloride - Swan - Myers, 0.025 Gm.
Solution Ephedrine Hydrochloride-Swan-Myers, 3%

TRUTH ABOUT MEDICINES

Viking Palatable Cod Liver Oil.—Cod liver oil containing 0.2 per cent of benzaldehyde. Its fat soluble vitamin A content is such that 0.002 Gm. per day is sufficient to initiate growth in the albino rat. Sigurd E. Roll, Chicago.

Rabies Vaccine-U. S. S. P. (Semple Method).—An antirabic vaccine (New and Non-official Remedies, 1927, p. 347) prepared according to the general method of David Semple (phenol killed). Marketed in packages of fourteen syringes, each containing 2 c.c. The content of a syringe is administered daily over a period of fourteen days. United States Standard Products Co., Woodworth, Wis. (Jour. A. M. A. May 21, 1927, p. 1637.)

Ampoules Ephedrine Hydrochloride-Swan-Myers, 0.05 Gm., 1 c.c.—Each ampoule contains 0.05 Gm. of Ephedrine Hydrochloride-Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235) in 1 c.c. Swan-Myers Co., Indianapolis.

Capsules Ephedine Hyrdochloride-Swan-Meyers, 0.025 Gm.—Each capsule contains 0.025 Gm. of Ephedrine Hydrochloride-Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235). Swan-Myers Co., Indianapolis.

Solution Ephedrine Hydrochloride-Swan-Myers, 3%.—A 3 per cent solution of Ephedrine Hydrochloride-Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235), preserved with chlorbutanol 0.5 per cent. Swan-Myers Co., Indianapolis.

Ovarian Hormone-Squibb.—A sterile, aqueous solution representing the physiologically active principle of the whole ovary. It is standardized in terms of its effect on spayed albino rats, one rat unit being the quantity necessary to induce estrus as judged by the smear method within three days in an ovariectomized, sexually mature rat weighing approximately 140 Gm. Ovarian hormone-Squibb is administered by hypodermic injection. For recent cases of amenorrhea, artificial or natural menopause, from 50 to 100 units is given in a series of injections over a period of from three to five days. For long existing cases of amenorrhea, artificial or natural menopause, much larger doeses may be administered. Ovarian Hormone-Squibb is supplied in 5 c.c. vials. each cubic centimeter representing 10 units. E. R. Squibb & Sons, New York. (Jour. A. M. A., May 28, 1927, p. 1713.)

MINNESOTA MEDICINE

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EDITORIAL

Skin Grafts

The free transplantation of a superficial or the full thickness of the skin may be resorted to to fill a surface defect of skin or mucosa which has been or will be healed by scar. With proper precautions, skin can be successfully grafted upon a primary raw surface, upon a freshened scarred surface, or upon a healthful granulating surface; but a higher percentage of takes on the latter will occur if the granulations are removed down to or through the newly forming scar base. Other things being equal, very thin grafts are better suited to places liable to contamination, such as a granulating surface or grafts placed within the mouth. Davis has lately simplified the academic discussion of this subject by suggesting the elimination of the terms, Thiersch graft, Wolff graft, full thickness graft, etc., and using the comparative terms of thin and thick grafts.

A graft carrying very little derma is more apt to take, but will contract more than one that carries a greater thickness of the true skin. A graft is more apt to take if applied under its normal lateral tension. This applies particularly to the thicker grafts. A thin graft may be applied on a freshened scar with little subsequent contraction, but if applied to fresh movable tissue will contract 60 per cent or more unless prevented by lateral tissue tension. The thin graft will eventually average whiter than the natural skin, while the thicker graft is more apt to acquire excessive tan, greatest in the dark skinned; the normal pink color is usually absent or lessened on the grafted surface, but the appearance of an extensive scar can often be much improved by superficial decortication and the application of a large, moderately thin graft. This latter may not be of natural color, but it will be more or less smooth and will hold cosmetics; the scar will not. "Port wine" stains can be improved by slicing off the epithelium with an outer layer of derma and applying thin grafts carrying some derma. As Eitner has pointed out, the derma may have its epithelium removed and, carrying a layer of fat, can be very successfully grafted subcutaneously to fill up a hollow place. The derma seems to serve as an intermediary for the blood supply, which the fat seems incapable of acquiring of itself.

While there are many reported successes of homo- and zoo-grafts, a few quite convincing, still it is better to use auto-grafts wherever possible. It is putting it conservatively to say that they are less apt to be disappointing.

Much of the voluminous literature of the semi-recent past on the technic of skin-grafting is not very helpful. The important points bearing on the success or failure of the graft are the resistance of the patient, a properly prepared raw surface, absence of virulent contamination, elimination of blood clots, a graft applied and held in place under proper tension and pressure, and control of the secondary infections that may so easily destroy a recent graft which has already taken.

The details of technic will vary with the location and the kind and purpose of the graft; but if the above points are applied in conjunction

with good judgment in the selection of the type of case to be grafted and the type of graft to use, then "skin-grafting" will prove a useful and happy addition to our bag of surgical tricks.

V. P. Blair, M.D.

Glandular Fever (Infectious Mononucleosis)

Since glandular fever was described by Pfeiffer in 1889 under the name of Druesenfieber numerous articles and reports have appeared on the subject in both the English and German medical literature. In spite of this some able clinicians have refused to make the diagnosis or admit its entity. Doubtless this is because glandular fever shows such variations in onset, course and severity and clinically its differentiation from other acute infections (notably scarlet fever, diphtheria and tonsillitis) is oftentimes so difficult. Many cases are undoubtedly diagnosed la grippe. To one who has recognized textbook examples of the various types of glandular fever—the mild, severe, acute and recurrent forms, all with febrile reactions and more or less cervical adenitis—no doubt as to its existence as an entity remains.

Since 1920 when Sprunt and Evans described infectious mononucleosis, an acute febrile disease involving the glandular structures particularly and characterized by a relative and absolute increase in the mononuclears in the blood, some of unusual appearance, numerous similar reports have been published. Dr. Richards' article in this issue of the journal adds four more cases to the literature. The importance of the recognition of the true nature of these cases lies in their differentiation from acute lymphatic leukemia, a fatal disease, the diagnosis of which depends entirely upon the cytological findings.

The opinion has gradually been taking form that glandular fever and infectious mononucleosis are the same disease. Descriptions of the two conditions as to symptoms, onset and prognosis are identical. No evidence has been offered that glandular fever exists without a lymphocytosis. In fact a few reports have appeared in the last five or six years which indicate there is a leukocytosis and a relative and an absolute lymphocytosis in some stage of glandular fever. Tidy and Daniel (Lancet, July 7, 1923) and Baldridge et al (Arch. Int. Med., Oct., 1926) are of the opinion that in every respect, clinically and cytologically, the two conditions are the same. The blood pictures found varied with the stage of the infection, some cases showing a polymorphonuclear leukocytosis at the onset and even a leukopenia during convalescence. But at some stage the lymphocytosis and unusual mononuclears described in infectious mononucleosis were seen in the glandular fever cases.

This is a question of course for the hematologists to settle. If the two conditions prove to be identical, which seems likely, the older name, glandular fever, is fully as descriptive as the term infectious mononucleosis and should be maintained.

OBITUARY

Dr. Hubert A. Pinault

Dr. H. A. Pinault, for 38 years a practicing physician at St. Joseph, Minnesota, died May 21, 1927, at the age of 72 years. Death was due to apoplexy.

Hubert A. Pinault was born in Rimouski, Quebec, Canada, in 1855. His early education as well as medical training were received in Canada, where he obtained his degree at Laval University in 1883. Dr. Pinault practiced medicine at Osseo and Red Lake Falls, Minn., prior to the establishment of his practice in St. Joseph, where he was actively engaged in practice until two days before his death. He was coroner for 30 years in Stearns County, resigning Jan. 1, 1927.

Dr. Pinault was an honorary member of his county and state medical societies, consulting staff member of St. Raphael's Hospital, St. Cloud, Minn., and advisory physician to St. John's University, Collegeville, Minn.

He leaves to mourn him his wife, two sons, three daughters and several grandchildren.

Dr. T. W. Hammond

T. W. Hammond, a practicing physician in Le Sueur county, Minnesota, for many years, who later became one of the most prominent attorneys in the West, died March 11, 1927, at his home in Tacoma, Washington, at the age of seventy-six.

Dr. Hammond was born in Massachusetts. He studied medicine at the University of Michigan and Jefferson Medical School in Philadelphia. Following graduation he practiced medicine at Montgomery, Minnesota from 1874 to 1880. He decided at that time to give up his medical practice and undertook the study of law. He followed this profession in Minnesota from 1881 to 1889, when he moved to Tacoma. He gained prominence in the legal profession in that city

and had been a United States Commissioner for the seven years preceding his death.

Besides his medical and law practice Dr. Hammond also devoted considerable time to the writing of books and short stories. One of his books, "On Board a Whaler," founded upon his sea experiences when eighteen years old, has been termed a striking novel of adventure.

Dr. Hammond is survived by his wife, one son and two daughters, all residing in Tacoma.

OF GENERAL INTEREST

Dr. A. W. Jones of Red Wing has been appointed health officer of his city, succeeding Dr. M. W. Smith.

Dr. Grace Gardner Smith, of Red Wing, was recently elected president of the Board of Education of Red Wing.

Dr. H. M. Knudtson has disposed of his practice at Browerville, Minnesota, and is now located at Norwood, Ohio.

Dr. W. H. Bueerman has opened offices at 1015 Corbett Building, Portland, Oregon, for the practice of surgery.

Dr. J. J. Swendson of Saint Paul was chosen president of the Saint Paul Lions club at the annual election held last month.

Dr. Leo G. Rigler of Minneapolis has been appointed roentgenologist and associate professor at the state university hospital.

Miss Mary C. Hoy and Dr. Edward A. Regnier of Minneapolis were married in June. Dr. and Mrs. Regnier will make their home in Minneapolis.

Dr. H. Walter Huseby, who has been practicing medicine at Waterville, Minnesota, has become associated with Dr. R. M. Eppard of Cloquet.

Dr. and Mrs. Emil S. Geist of Minneapolis and their three children will spend the summer touring Europe. They sailed from New York, June 18.

Dr. H. F. Wiese, who was formerly with the Sivertsen Clinic, Minneapolis, has opened offices for private practice at 701 Physicians and Surgeons Building.

Dr. Leon J. Tiber of Saint Paul has returned from Europe, and has resumed his practice at 214 Hamm Building. Dr. Tiber is now specializing in gynecology and obstetrics.

Plans are under way for the construction of a nurses' home for Fairview hospital in Minneapolis, to cost approximately $150,000, according to an announcement made late in May.

Dr. R. V. Taylor, formerly of the Mayo Clinic, who has just returned from China, is now established at 58 St. Emanuel Street, Mobile, Alabama, for the practice of surgery.

Dr. H. Longstreet Taylor of Saint Paul was elected president of the National Tuberculosis Association at the recent annual meeting of that organization held at Indianapolis.

Miss Elizabeth Lyle Bacon, daughter of Dr. and Mrs. Lyle C. Bacon of Saint Paul, became the bride of Dr. Howard Y. Williams, pastor of the People's Church, Saint Paul, Tuesday, June 14.

Dr. J. C. Litzenberg of Minneapolis was unanimously elected chairman of the Section on Obstetrics and Abdominal Surgery of the American Medical Association at the meeting held at Washington, D. C., in May.

Dr. W. W. Covell of St. Peter, Minnesota, has purchased a building on the corner of Park Row and Third street to be remodeled at once into a modern hospital. The hospital is to be open to all physicians and to the public.

Dr. and Mrs. W. J. Mayo, Dr. and Mrs. D. M. Berkman and Dr. and Mrs. Waltman Walters sailed May 21 on the Leviathan for England. The doctors expect to visit medical clinics in England and Paris before their return, July 10th.

Dr. R. W. Browne, who has been in charge of the Aberdeen Hospital, St. Paul, for the past fifteen months, has been appointed head of the United States Veterans Bureau hospital at Fort Bayard, New Mexico, where he took up his duties in June.

Dr. J. D. Camp has received the appointment of consulting roentgenologist to the new Palmer Memorial Hospital for Cancer in Boston. It is the newest addition to the Deaconess' Hospital group. Dr. Camp will be in charge of *x*-ray therapy.

Dr. Charles William Mayo, son of Dr. and Mrs. Charles H. Mayo of Rochester, and Miss Alyse Varney Plank of Collingdale, Pennsylvania, were married Saturday, June 25, at the home of the bride's parents. Dr. and Mrs. Mayo will make their home in Rochester, Minnesota.

Dr. John L. Rothrock of Saint Paul has been named head of a campaign to raise $3,050,000 for the University of Pennsylvania medical school. Graduates are raising the fund for use in the further development of the various units of the university for medical education and service.

Announcement has been made of the marriage of Miss Leone Marie Dennis of Marquette, Michigan, to Dr. Leo Courtney Culligan of Saint Paul. The wedding was solemnized Wednesday, June 1. Dr. and Mrs. Culligan will be at home in their new home on Sibley Memorial highway after August 1.

Word has been received that the John Horsley Memorial Prize will be awarded to Dr. C. B. Morton at the commencement exercises of the University of Virginia. The prize, consisting of $1,000, was established in February, 1925, by Dr. J. Shelton Horsley of Richmond, Virginia, as a memorial to his father, Mr. John Horsley.

On May 26 Dr. J. A. Myers of Minneapolis read a paper before the twenty-third annual meeting of

the National Tuberculosis Association of Indianapolis. On the twenty-eighth of May he appeared before the Wisconsin Anti-Tuberculosis Association in Milwaukee, and that evening presented another paper before the Milwaukee Academy of Medicine.

The American Board of Otolaryngology conducted an examination at Washington, D. C., on May 16 and 17, and at Spokane, Washington, on June 4. Of the 142 men examined at Washington, D. C., 119 were passed and 23 failed to pass the examination. In Spokane, the number passed was 46, and the number failed was 6.

The next examination will be held in Detroit on September 12, 1927. The applications for examination should be sent to Dr. H. W. Loeb, Secretary, 1402 South Grand Boulevard, St. Louis, Missouri.

Dr. E. Z. Witzeman of the Mayo Clinic and Dr. E. A. Pohle of the University of Michigan were recently appointed to the staff of the University of Wisconsin medical school. Dr. Witzeman will act as assistant professor of physiological chemistry. Dr. Pohle is to direct therapeutic work with radium and *x*-rays in the radiology division of the new Service Memorial Institute.

Dr. Herbert E. Chamberlain of New York will become head of the Minneapolis Child Guidance Clinic next fall, succeeding Dr. Smiley Blanton, who has resigned to go to Vassar College as professor. Dr. Chamberlain has been identified with the National Child Guidance Association for the past two years and has made extensive research into psychiatry in the United States and abroad.

At the recent meeting of the Association of American Physicians in Atlantic City, Dr. N. M. Keith, Rochester, was elected to active membership and Dr. W. S. Lemon to associate membership. Drs. W. C. Alvarez, C. S. McVicar and P. S. Hench were made members of the Society for Clinical Investigation. Drs. McVicar and Weir were also elected members of the American Gastro-Enterological Association.

Minnesota has the largest number of church supported hospitals per capita in the United States, according to Dr. Frank C. English of Cleveland, Ohio, secretary of the American Protestant Hospital Association, who recently visited Minneapolis in preparation for the meeting of the association in that city October 8, 9 and 10. Arthur M. Calvin, business manager of the Northwest Baptist Hospital Association, has been made general chairman for the convention.

Members of the Basic Medical Science Board, recently appointed by Governor Christianson, include the following: Dr. S. H. Boyer, Duluth, physician, to serve until April 1, 1929; Dr. Arthur E. Allen, Minneapolis, osteopath, term to April 1, 1929; Richard E. Scammon, Minneapolis, anatomist at the state university, term to April 1, 1931; Dr. E. T. Bell, Minneapolis, pathologist at the university, term to April 1, 1931, and Dr. Louis E. Coss, Willmar, chiropractor, to serve until April 1, 1933.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of April 13, 1927

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 13, 1927, at 8 o'clock. Dinner was served at 7 p. m.

The meeting was called to order by the President, Dr. F. E. Burch. There were 43 members and 1 visitor present.

The minutes of the March meeting were read and approved.

Dr. L. A. Nippert and Dr. H. L. Staples were elected to Honorary Membership in the Academy. Dr. C. B. Wright was elected to Active Membership from Minneapolis, and Dr. C. E. Conner to Active Membership from St. Paul.

Dr. George Douglas Head read the following memorial of the life of Dr. A. W. Abbott, a member and past president of the Academy, and a motion was carried that it be made a part of the permanent records of the Academy of Medicine:

Amos Wilson Abbott has passed on. He was one of the founders of the Minnesota Academy of Medicine and a pioneer surgeon of this State. Most men relinquish their scientific activities as advanced age creeps upon them. This was not so with Dr. Abbott. His presence in these later years at the meetings of the Academy and his participation in the discussions forcibly indicate how brightly the fires of professional interest and enthusiasm burned in his heart. It falls to the lot of but few medical men to have left behind them so honorable and useful a life history. The high quality of his scientific attainments, the lofty purpose which characterized his career and the purity of his life have endeared him to every member of the Society. It is most fitting to present to the Academy and place on our records some of the important facts of his life.

Amos Wilson Abbott was born of missionary parents in Ahmednuggar, India, January 6, 1844. When he was one year of age, he, with his native Christianized Indian nurse, was kidnapped. The natives were about to kill him when the nurse reminded them that according to an Indian supersition something dire would happen to them if they killed him before sundown. They decided to wait and the nurse stole away with him, carrying him to his parents.

He came with his parents to the United States when he was four years old and lived in Wilton, N. H. When he was seven, his parents went back to India, leaving him with an aunt who was of the old New England type, very religious and unrelenting. One day when he was twelve years old his aunt accused him of breaking a window; when he denied having done so she doubted his word, whereupon he left her home, shifting for himself from that time on. He attended Phillips Andover Preparatory School, working his way. At fifteen he entered Dartmouth College. He had been there two years when the Civil War broke out and he enlisted as a drummer boy. He was taken prisoner

and confined in Libby Prison. He escaped from there with six companions but barely missed being shot in the break for freedom. The night Lincoln was assassinated, he was in the lobby of the theater to see the President enter. He saw Booth on horseback as he escaped. After the war he earned by his own effort the money to finish his education.

Dr. Abbott received his medical education at the College of Physicians and Surgeons, N. Y. He entered practice first at Delhi, N. Y., but came to Minneapolis in 1877.

In 1880 he was married to Helen Wright of Delhi, N. Y., who with a son and two daughters survive him.

On March 5, 1902, Dr. Abbott opened the Abbott Hospital in the old double house at 10-12 East 17th St., Minneapolis, Minn. Here he continued his surgical work until 1910 when the present Dunwoody building was erected for him by Mr. Dunwoody, a life-long friend, as a token of gratitude for the operative relief given Mrs. Dunwoody. In 1914, at Mr. Dunwoody's death and at Dr. Abbott's suggestion, the Abbott Hospital was given to Westminster Presbyterian Church of Minneapolis together with the Dunwoody endowment of $100,000.

Dr. Abbott has since been the chief of staff of Abbott Hospital. He has given much of his time and strength in building up this institution which, with the gifts of Mr. T. B. Janney and Mr. O. C. Wyman, ranks among the strong hospital organizations of Minneapolis.

Dr. Abbott early in his career showed interest in medical education and taught anatomy in the St. Paul Medical College. In 1881 he assisted in founding the Minnesota College Hospital, where he was professor of anatomy and later served as professor of gynecology. He later became associated in the same capacity with the medical school of the University of Minnesota, where he taught for years, and held an emeritus professorship there at the time of his death.

In conjunction with Dr. Clarke Stewart and Dr. F. F. Wesbrook, he founded the Minnesota Pathological Society. He was honored by various medical organizations, having served as President of the Hennepin County Medical Society in 1900-1901; the Minnesota State Medical Society in 1893; the Academy of Medicine in 1888-1889; the Minnesota Pathological Society in 1913-1914; and the Western Surgical Association in 1911. He was a member of the American Medical Association and of the American College of Surgeons.

Early in his professional career he became a contributor to medical literature out of the richness of his experience and his scientific observations. The first publication of which I find record was a paper upon "Antipyrin" published in the Northwestern Lancet in 1885. Then follows year by year a long bibliographic list of observations, case reports, public addresses, and medical society papers which will be published elsewhere. These titles cover a wide range of subjects. Some of these contributions to medical literature are especially noteworthy and were real additions to medical knowledge. Among these should be mentioned his paper read before the Western Surgical Association in December, 1915, upon "The Early Diagnosis of Intussusception in Children under Three Years of Age," which made a profound impression and is considered a classic in the clinical description of this condition. His last paper published in Minnesota Medicine in 1923 was entitled "Surgery in a Past Generation." This closes the chapter of his life achievements. It is a fine record.

The members of this Academy will miss this modest man with his honest, frank manner, his quiet dignity, his hatred of sham or deceit. In his death the profession of medicine has lost a truly great member.

The Committee:

Archa E. Wilcox,
Arthur T. Mann,
Geo. Douglas Head, Chairman.

The scientific program of the evening was as follows:

Dr. Emil S. Geist (Minneapolis) read a paper on "Fracture of the Hip." Numerous charts were shown.

DISCUSSION

Dr. A. T. Mann (Minneapolis): It seems to me that the supposition that the synovial fluid prevents union in these fractures is purely a theoretical assumption and is not proven. The examples which are given to support the contention that synovial fluid prevents union can be explained on some other ground, and that is—circulation.

When the upper head of the radius is split into fragments and separated from the shaft, these fragments are entirely without a blood supply. They then become autografts and for union must be firmly fixed to the living ends of the bone; otherwise they will degenerate. I have found that out in a series of experiments on dogs to determine the behavior of autografts in the knee-joint. I have taken out one condyle of the femur in each knee and held it in my hand and then replaced it; *i.e.,* it becomes a true autograft. These I fastened into place sometimes with furniture nails and sometimes with screws. Most of them were fastened firmly; a few were fastened less firmly to determine their behavior. Those firmly fastened always lived and united into place; when loosely fastened, union failed and the graft degenerated. For the same reason this would be true of the fracture of the upper head of the radius, with the fragments separated from their blood supply, and of the small bone in the wrist. Unless fairly firmly fixed into place, they follow the law of non-union and absorption.

We have fractures of the patella which are bathed with synovial fluid. The rule under the old method of treatment is that there is never bony union. With the new treatment of opening the joint and fastening the fragments firmly, there is practicaly always union.

I want to commend the use of the carpenter's mallet to produce firm impaction. The principle is the same: that when the part which has no circulation is firmly fixed, it should follow the law of autografts and unite. With the Whitman technic one does not always get

them into close position because of the small, jagged irregularities which tend to hold the greater portions of fragment surfaces away from each other. But, with the impaction with the carpenter's mallet as Cotton uses it (which is a big wooden mallet), and he gives it a swinging stroke and a through stroke until he feels something yield, the fragments are forced into broad contact. If they are now held firmly they should follow the law of autografts, or better, and become united.

Dr. J. F. Corbett (Minneapolis): Something occurred in a case I had a while ago which indicates that healing is not always a case of contact. The case I refer to is that of an old lady who had an impacted fracture of the femur. This had been treated for some months and the fragments were still in apposition when I first saw the case, but in the course of time, in spite of the fact that she kept off her feet, absorption of the bone occurred, there was non-union and a slipping of the fragments occurred. It seems that could not be from lack of contact because we had good contact. There is something else that enters in, either disturbance of circulation or synovial fluid as has been suggested.

Dr. A. R. Colvin (St. Paul): Dr. Geist has read a paper on a very important subject.

I think it is pretty generally conceded now that union is to be expected even in the sub-capital fractures of the neck, and that it is the rule, if the treatment advised by Whitman is faithfully carried out. I had one patient 85 years of age, whose sub-capital fracture united. At the Ancker Hospital, where we always have ten or twelve fractures of this character, we practically do not have non-union, if Whitman's procedure is carried out to the finish.

Intertrochanteric fractures always unite; the problem here is to get union in a good position.

Regarding synovial fluid, and non-union, the amount of synovial fluid in a normal joint is very small and the effusion in an injured joint is an inflammatory exudate. Dr. Mann's reference to the influence of synovial fluid in fracture of the patella is very convincing. There is a wide separation of fragments, but if they are brought into control by suture, union practically always occurs. Synovial fluid has a much better opportunity here to prevent union than in hip fractures, where perhaps there is always at least partial contact of fragments.

While stereoscopic radiographs of fractures of the neck of the femur are interesting as a study, they are not at all necessary. A plain radiograph gives us sufficient information for diagnosis and treatment. The deformity both clinically and pathologically is very typical; the posterior aspect of the neck, being its weakest part, gives way first and whether impaction occurs or not, the deformity is explained by the crushing of this area, the limb thus rolls outward causing the eversion of the foot, which is so typical. With this deformity present, we know that its correction means correction of the deformed position of the fragments, and this is accomplished by traction, inversion, and abduction of the limb.

It is well to remember that incomplete fractures of the neck of the femur occur, and that both here and in fractures without displacement the careful handling of the patient, while being transported to a hospital for instance, is very important. I have seen one case where, in a doubtful diagnosis, an *x*-ray showed a fracture without displacement, but when the patient arrived at the hospital in the ambulance both clinically and radiographically the picture had changed to the typical deformity. It is also well to remember that in impacted fractures of the neck the impaction may be of such firmness that the patient can walk for some time before the impacted area breaks down. This is important not only from a therapeutic point of view, but also from a medico-legal one.

I recall a recent case at the Ancker Hospital of subcapital fracture in a young man with bilateral paralysis of the lower extremities due to poliomyelitis; some months after union had been obtained he fell and refractured the same hip. This time it seemed wisest to take out the head and insert the neck of the femur into the acetabulum. The head was soft and yellowish in color, and looked almost like a necrosed bone; it was quite evident that union again would be impossible.

It is also well to remember that, even where a perfect anatomical result is obtained, occasionally a deforming arthritis, with osteophytic outgrowths will occur, which is very disabling.

Dr. C. C. Chatterton (St. Paul): I remember my first visit to the American Orthopedic Society and at that meeting one of the older members stated that he never had non-union in intra-capsular fractures because he treated the cases until they were well. I have seen two patients this winter with very good treatment over too short a period of time; patients were up and about too soon and, if callus was formed, it had broken up. I think the Whitman method of treatment for intracapsulars is the best method and if adhered to, the time element being carefully considered with at least four months without weight-bearing, that union will practically always take place. Such men as Albee even state that there are only about ten per cent of intracapsular fractures of the hip in which bone grafts should be used. I am sure that if the Whitman method is used consciously, the result in intracapsular fractures will be most satisfactory.

Dr. George E. Fahr (Minneapolis) read a paper on "Myxedema Heart," illustrated with numerous lantern slides.

DISCUSSION

Dr. Carl Drake (St. Paul): I wish to ask Dr. Fahr whether some of the reduction in heart measurements can't be accounted for by loss of body weight, a lower diaphragm, and a swinging of the heart more towards the center of the chest? Also whether a dis-

appearance of the myxedema might not result in the diminution in the thickness of the heart muscle?

Dr. H. L. Ulrich (Minneapolis): There is no question that the heart muscle does not function as well in a certain percentage of myxedema. The far advanced cases of dilatation with cardiac insufficiency are quite obvious. It is the mild myxedema or subthyroids with functional changes mainly of conduction which are more frequent, less obvious, the more overlooked. To illustrate: Recently I saw a middle-aged woman, the wife of a competent physician. She had been having a great deal of trouble with attacks of auricular fibrillation. She has an organic defect—double mitral. Her basal rate was minus 25 per cent. Since using thyroid, fibrillation has not occurred. To me it is a little puzzling, physiologically speaking, how a heart which dilates several times can come back to its normal size. We have always considered that when a heart dilated and then returned to its apparent normal size, there would be some change in the size of the cells themselves with a little subsequent hypertrophy. Why this does not occur in the myxedema heart, I don't know.

Dr. Geo. Douglas Head (Minneapolis): I would like to raise the question of the amount of fluid actually lost by these patients while under the administration of thyroid as compared to the amount of fluid in the circulatory system when they were not taking thyroid. It does seem very remarkable that these hearts should change so tremendously in size in such a short time. I think we have all observed circulatory changes in myxedema: the lack of cardiac force, dyspnea on exertion, edema, etc., but I think Dr. Fahr has brought out something here that perhaps not many of us have appreciated. I know I haven't, and I shall certainly be on the lookout for it in the future. The cause of this very remarkable dilatation of the heart chambers might possibly be explained on the basis of retention of fluid in the vascular system when thyroid is not being given as compared with that when it is given.

Dr. G. Schwyzer (Minneapolis): I would like to ask Dr. Fahr about the weight of the patient; having seen a number of myxedematous cases with and without thyroidectomy, I am especially interested in Dr. Fahr's valuable observation. I have never noticed any heart symptoms that were alarming in any of my cases of myxedema. I wonder whether this myxedema heart, as Dr. Fahr calls it, is a rarity or whether we did not make a sufficient study of the heart in our cases.

I recall especially a case in a woman who never was operated upon for her goiter and who was a pronounced case of myxedema. She complained of marked weakness in her legs, had difficulty in her speech, her mental attitude was entirely changed, and she had gained twenty pounds in weight due to the marked deposits of mucin in her subcutaneous tissue. These twenty pounds body weight disappeared magically by administering thyroid extract in sufficient quantity.

I am wondering whether the mucin deposit in the body might account for the change in the heart.

Dr. F. E. Burch (St. Paul): I wish to ask Dr. Fahr if he has any observations on changes in the hearts of myxedematous children.

Dr. Fahr (in closing): Two gentlemen brought up the question of loss of weight. It is true there was loss of weight; that always takes place when you have myxedematous patients and put them on thyroid. The weight changes, as well as changes in the anemia which they practically all have, are much slower than the heart change. The weight loss still keeps on after the heart has become compensated.

In connection with what Dr. Drake brought up about the diaphragm position, I used the transverse diameter measurements in this talk, but I have also measured the silhouette area which does not change much with slight change of diaphragm position. Moreover, the diaphragm is actually in nearly the same position before and after giving thyroid. So the change is not due to change in the position of the diaphragm.

About the thickness of the muscle and about the mucin deposit in the heart, Dr. Bell has looked at one of the cretin sheep hearts and he says there is no pathologic change in the heart muscle that he has discovered so far. Thickness of the muscle can't be the thing that causes these changes for a change in thickness would be of the order of a few millimeters only.

Dr. Head asked about the fluid lost and how much increase of fluid there might be in the circulation. One of the things that the thyroid does is to mobilize water in the tissues. When you give thyroid you can prove that water has been pulled out of the tissues and put back into the blood which, in myxedema, has less than in the normal state. That is one reason why you get diuresis on thyroid administration.

Dr. Ulrich brought out that there might be mild borderland types of myxedema. I did not go into them tonight because they are very hard to prove. I believe, as Dr. Ulrich does, that there are many people walking around whose memory is bad, thinking a little more slowly than formerly, and when you take their basal rate it will be only minus .10 or minus .12 or minus .15, and who are frequently a little short of breath. Putting them on thyroid my help them. I notice Dr. Ulrich was keen enough to give thyroid in a case of old mitral stenosis with recent symptoms of mild myxedema. At the same time that you give the heart more work to do you are giving it more ability to do it in myxedema treated with thyroid extract. I think on the whole you are justified in giving a dose of thyroid even if there is some heart disease present, provided you watch the case carefully for a long period.

Dr. Gustav Schwyzer stated that these alarming cases are very rare in his practice and he sees quite a lot of myxedema. I do not claim that all cases of myxedema are heart cases. In three years we have had six cases of myxedema and in all six cases there were some symptoms of heart failure. If I should make the statement that all cases have it, that would not be true. Heart disease is sometimes associated with

myxedema. At the present time no one knows how frequently.

Dr. Burch asked about myxedema in children. I have no material to study that phase of it and have not studied that at all.

Dr. A. R. Colvin (St. Paul) reported a case of acute duodenitis, with operative and postmortem findings:

The patient was an unmarried woman, age 66, who entered Aucker Hospital March 28, 1927, complaining of abdominal pain, nausea and vomiting. She said she had been suffering from a cold off and on all winter, and that she was quite suddenly taken ill 48 hours before admission, with pain and nausea at 9 p. m. At 2 a. m. of the next day, she was unable to retain anything taken by mouth. The pain was of a sharp cutting character. For the past 15 years she says she has been bothered with gas on her stomach, and belching. She found that certain rich and greasy foods disagreed with her.

Except for childhood diseases, she had always been remarkably well.

When seen by me the next morning, after her admission, she presented the appearance of a very sick person; her pulse was frequent and irregular, temperature 100½°, leukocyte count 29,000. The urine contained a heavy trace of albumin and some pus cells. One got the impression that while her sensibilities seemed blunted, she evidently was suffering a good deal, but was quite careless in the recital of her symptoms.

There was general abdominal tenderness with more complaint of pressure in the right hypochondrium than elsewhere; muscular resistance, while more evident in this region, was not anywhere very marked. There was nothing abnormal made out by pelvic examination.

While realizing the gravity of her illness, in the analysis of history, symptoms, and physical findings, difficulty was experienced in arriving at the apparent beginning of her pathology. A ruptured appendix seemed improbable; there was nothing in the pelvis to cause the symptom complex, neither the history of onset nor the course afterwards was like that of perforation of gastric or duodenal ulcer, and the symptoms and physical findings were not like those usually seen from a neglected perforation. Acute pancreatitis seemed just as unlikely; and while an acute phlegmonous or gangrenous inflammation of the gallbladder can run a rapidly destructive course, still there seemed to be something contradictory in the story and findings. One noted the albumin and pus in the catheterized specimen of urine, without feeling that these findings had anything to do with the symptoms. And so such was the frame of mind in which one approached the operation.

A midline incision above the umbilicus disclosed an acute inflammatory condition in the region bounded by the duodenum, colon and right kidney. The duodenum was thickened, red, edematous, and both it and the surrounding tissues were covered with a fibrinous exudate; while there was in this region no thick pus, there was a small amount of cloudy fluid. Not finding any perforation of either stomach or duodenum, and the gallbladder looking more or less normal, a hurried examination of the region of the appendix was made and, nothing being found, the operative wound was closed with drainage. The patient died 8 hours later.

Postmortem findings: There is a small amount of free purulent fluid in the peritoneal cavity. The gallbladder wall is somewhat thickened and its surface is covered with yellow fibrin similar to that seen in the rest of the peritoneal cavity. There is an opacity of the surface which is apparently not associated with the acute process. The mucosa is flecked with small areas of cholesterin, and the bile ducts are patent.

The stomach shows nothing of note. The first 2 cm. of the duodenum are practically normal. Beginning about in the region of the ampulla of Vater the duodenal wall is markedly thickened. This thickening involves the duodenum from this point to the beginning of the jejunum at the ligament of Treitz. Besides this thickening of the duodenal wall, there is a multiple ulcerative process of the mucosa. These ulcers are acute in appearance, irregular in outline, but for the most part are transverse in location. They have a purulent material on their bases, but there is no evidence that they perforate deeper than the submucosa. The balance of the intestinal tract shows nothing of note.

The right kidney weighs 163 grams. The capsule strips with some difficulty, tearing the cortical surface of the organ. The cut surface of the organ is cloudy and swollen in appearance and the markings are indistinct. The cut edge everts. The pelvis is slightly dilated and the ureter is indurated, but about normal in size. The left kidney weighs 105 grams. The pelvis is enormously dilated so that the organ is practically destroyed. In one calyx is lodged a stone. This stone, however, is not located at the pelvic ureteral junction. The dilatation has practically destroyed the entire kidney so that it is simply a sac and contains a purulent fluid.

Diagnoses:

1. Acute fibrinous peritonitis.
2. Acute ulcerative duodenitis.
3. Chronic pyonephrosis (left).
4. Renal calculus.
5. Bilateral bronchopneumonia.
6. Chronic cholecystitis.
7. Cloudy swelling of the heart, liver and kidneys.

DISCUSSION

Dr. A. Schwyzer (St. Paul): This is an unusually pretty case, but I don't think it quite belongs in the same group as the cases of duodenitis which Dr. Judd reports. His cases were more of long standing and gave symptoms very similar to ulcers; they were localized infiltrations situated where most of the duodenal ulcers are found. They give a history of prolonged distress and are amenable to surgical relief.

The case which Dr. Colvin shows us here represents what we know from pathology as multiple duodenal ulcers, not very infrequently seen in grave septic infections. It may be that the kidney infection in this

case was the primary cause for this. This is an acute infectious process, as part of a general sepsis.

A few weeks ago I excised one of the localized infiltrations in the duodenum, such as Judd reports. It was situated near the pylorus. The symptoms were of a more chronic character, similar to ulcer. The area was removed, together with the anterior part of the pyloric sphincter, and the opening closed transversely. While there was muck thickening, it was mostly all in the sub-mucosa. The mucosa was not ulcerated. This patient also had an infected gallbladder. There were no stones, but from the wall of the gallbladder we cultured staphylococcus aureus.

Dr. H. L. Ulrich (Minneapolis): Dr. Colvin's report reminds me that every once in a while a chronic infection of the genito-urinary tract is not such a mild affair. I saw a young man recently who had a chronic cystitis with a diverticulum of the bladder and pyelitis of the right side. He was cystoscoped. He had an acute reaction following this and on the third day after the reaction was receding he complained of a sudden intense pain in the head and became unconscious. There were no localizing symptoms. Lumbar puncture gave us a bloody fluid followed by pure blood. He died in seven hours. Autopsy revealed a subdural hemorrhage which was universal. One cannot help feeling that his chronic infection paved the way for this hemorrhagic manifestation.

The meeting adjourned.

Carl B. Drake, M.D.
Secretary.

RESIGNATION OF DR. GEORGE H. SIMMONS

The Council on Pharmacy and Chemistry has accepted with regret the resignation of Dr. George H. Simmons from the chairmanship of the Council. Since 1905 Dr. Simmons has guided the activities of the Council. Before the establishment of the Council, the standard and quality of drugs were left entirely to the manufacturer, except for products in the Pharmacopeia. The rise of the proprietary medicine industry and the numerous attempts made to foist on the public and on the medical profession products without merit led to repeated calls from the House of Delegates of the American Medical Association for an official body to aid in overcoming this evil. As General Manager, in February, 1905, Dr. Simmons first presented to the Board of Trustees of the American Medical Association a plan for the organization of such a body, and, in accordance with their decision, arranged for the first meeting, February 11, 1905. Under his guidance the Council has carried forward its work and today still stands as the only medium to which the physician may turn for the unbiased truth regarding proprietary medicines. In accepting his resignation, the Council extended him a vote of thanks, not only on its own behalf but also on behalf of all the medical profession of this country. (Jour. A. M. A., May 7, 1927, p. 1483.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of March 3, 1927.

Meeting was called to order by Dr. S. R. Maxeiner, Vice President.

Dr. Verne S. Cabot read a paper on Surgery in Gastric Ulcer which is published on page 412 of this issue of Minnesota Medicine. Published discussions will be found following the paper itself in this issue.

A paper was also read by Dr. H. O. McPheeters entitled "Injection Treatment of Varicose Veins by the Use of Sclerosing Solutions," the abstract of which follows:

Abstract of Paper On

THE INJECTION TREATMENT OF VARICOSE VEINS BY THE USE OF SCLEROSIS SOLUTIONS*

H. O. McPheeters, M.D., F.A.C.S.

The injection treatment of varicose veins by the use of sclerosing solutions has been practised in the European Clinics extensively for the past fifteen years with most gratifying results. The principle of the treatment has been the production of a chemically produced thrombo-phlebitis by a destruction of the intima of the vein. This causes a firm thrombus formation densely adhered to the vessel wall, in contradistinction to the thrombus that is formed following the usual infectious thrombo-phlebitis which causes an adhering of the thrombus at separate sites on the vessel wall, leaving the majority of the clot lying against the normal intact endothelium and thus free to break loose and form an embolus at any time following manipulation of the hard thrombosed vein in any way. This is the reason that emboli happen so frequently following surgery. Theoretically, the embolus should occur frequently following the injection treatment but, practically, it never occurs.

Many types of solutions are used, but this report is confined entirely to the use of 20 per cent sodium chloride in sterile distilled water. The report deals with a total of 31 cases with approximately 180 separate injections. At no time have the patients had any untoward symptoms except those following faculty technic. The only objection to the method is the occurrence of a cramp-like pain in the extremity distal to the site of injection, which lasts about one-half to one minute following the injection. The treatment is entirely ambulatory. In fact, the author believes that he gets better results if the patient is ambulatory than if he is at rest.

Dr. J. M. Hayes: I want to congratulate Dr. McPheeters on his excellent presentation of this work.

The first of this work done extensively in America was by Dr. Kretchmeier, who came to this country about six or seven years ago and located at Red Wing, Minnesota. After remaining there about a year he

*This paper will appear in full in Surgery, Gynecology and Obstetrics.

came to Minneapolis and located here. He created quite a sensation here among the victims of varicose veins and ulcers.

In the outpatient department of the University of Minnesota, we had many requests for these treatments.

I went to consult Dr. Kretchmeier and to get his opinion of what he might do. I had hoped that he might treat some of these charity cases or teach us how to do it. I got little useful information. I looked up the German literature and found that Linser had first done this work in 1911. He first wrote it up in 1917. At first he used only a solution of bichloride of mercury 1 c.c. of a 1 per cent solution at a sitting. This amount of bichloride of mercury is not a toxic dose. Hammar, who reported the only fatal case in literature, made several injections at a sitting and evidently administered a lethal dose. It has been shown that this amount of bichloride is eliminated in twenty-four hours. We, therefore, may inject every twenty-four hours. In the dispensary and in my office I have injected about 150 patients and have done over 1,500 injections in all. I had three or four perivenous injections the first year I used this method but not one recently. The first year I always injected sterile water first so that I could make sure that I was in the vein before injecting the bichloride. We tried salt solution and also sodium salicylate to replace the mercury but were not able to obtain as good results. These other materials were more inconvenient to inject and we did not get thrombosis so frequently or consistently. Our technic of injecting is not the same as Linser's. I insert the needle in the full vein, then merely collapse the vein on the point of the needle as the solution is being injected. After the needle is withdrawn the venous collapse is maintained by fastening a small pad of cotton or gauze over this point. The slides will show the type of cases in which we used this method, most widely. You may readily see that these cases were not favorable for surgery, nor, in fact, for any other curative method.

Dr. Moses Barron: There are several points I would like to speak about, especially in regard to the thrombosis which is produced by injection of certain solutions into the veins. Spontaneous thrombi and more especially the so-called marantic thrombi, form in veins that may be not greatly diseased and consequently may possess fairly normal endothelial lining. Such thrombi can, therefore, break loose at times and produce pulmonary emboli. The thrombosis on the other hand which develops in a vein that has been injected is of quite a different nature. The injected material acts as an irritant on the lining and causes a swelling and degeneration of the intima. It is on this degenerated surface that the thrombus gradually develops by a deposition of fibrin and blood platelets. The thrombus formation goes on slowly and the clot becomes firmly adherent to the wall of the vein, thus favoring early organization. Obviously such a thrombus can be dislodged only with great difficulty or not at all.

Dr. Bessessen brought out a point in regard to the importance of expressing the blood from the vein before injecting in order to secure coaptation of the two wall surfaces and thus bring about organization. The reason for expressing blood from the veins is not to bring the two walls together, but to keep the injected material from being so greatly diluted with blood as to interfere with its destructive action upon the endothelial cells. The injection method of treatment of varicose veins is extensively used in Europe. Instead of mercuric chloride or concentrated salt solution they now use an invert sugar called calorose. Formerly they also used a 66 per cent sugar solution but this solution was too thick and syrupy. The calorose solution is thin and can pass through a fine needle. A fine needle, however, is not necessary for such a purpose. Ten c.c. of this invert sugar solution is injected into a varicose vein after pressure is applied above with the thumb and the area is then bandaged with a little pressure. A coarser needle is of value, in that one is able to tell more readily when you have entered the vein before starting to inject the solution. The injection of more than one vein at a single sitting is generally advised against, because of the possible danger of thrombi that may break loose. As to the question of the reverse flow of blood in these veins, it has been definitely proven that this does occur. This condition, however, is favorable for the injection treatment rather than against it, since it also helps to obviate the danger of loosening emboli and carrying them to the lungs.

Dr. L. C. Logefeil: I think that Dr. McPheeters is to be complimented on the fact that he brought this matter before the medical profession in such an interesting manner.

I was fortunate enough to see some of this work done on my recent trip abroad. Linser in Berlin and Linser in Dresden are perhaps doing most of this work. It was being done extensively in Paris. I liked best the way the injections were given in Vienna. They were taken care of in the Department of Dermatology and the solution used was calorose, which is a 40 per cent invertin sugar solution. The advantages claimed for this solution were the following: (1) that it produced less pain; (2) was less likely to give a slough if some of it was injected outside of the vein; (3) that it was entirely non-toxic, which allowed larger amounts to be given.

I have been using this solution since my return, as well as the salt solution which Dr. McPheeters uses, but my experience bears out what I saw in Vienna. Salt solution seemed to give a very severe cramp in all of my cases, while the calorose gave only a very slight cramp or none. On one occasion I injected about 5, c.c. and later found that it was outside of the vein but got no sloughs, only a hard painful indurated area which disappeared after a few days.

The technic used in Vienna is somewhat different than what Dr. McPheeters describes. The leg is kept in the prone position and the blood is milked out of the vein before the calarose is injected, thus avoiding

dilution of the sclerosing solution. The contra-indications stated by them were pregnancy, and valve stones, with no injection of large veins above the lower third of the thigh. The process is a simple one and the patients are ambulatory throughout. Professor Noble reported 3,700 cases with 10,000 injections with only two cases that showed slight evidence of emboli, but these cleared up without any serious trouble. They never injected more than one vein at a sitting and never more than twice a week.

My impression of this method of treatment of varicose veins is that it is safe and reliable if the proper precautions are taken, and the usual rules laid down, which are found to be necessary by men who have had extensive experience.

At the executive meeting following the scientific discussions the following officers were elected for the coming year: Dr. H. B. Sweetser, president; Dr. W. D. White, vice president; Dr. T. H. Sweetser, secretary and treasurer.

Theodore H. Sweetser, M.D., Secretary.

THE DOCTORS OUGHT TO KNOW

An official tells of a country laborer who, on his way to work one morning, called at the office of vital statistics and made known his wish to register his wife's death.

When the clerk asked the date of the demise the man said:

"She ain't dead yet, but she will be before night. I thought it would save me another journey if you put it down now."

"That won't do at all," said the clerk. "Perhaps your wife will live a long while yet."

"Well, I don't know," responded the laborer, doubtfully. "The doctor says she won't and he knows what he has given her."—Pittsburgh *Chronicle-Telegraph.*

MOTHER REFUSES TO LET CHILDREN TAKE SCHICK TEST; OPPOSES "SHEIKS"

(By Associated Press)

Harrison, N. J., Feb. 15.—The board of health wrote parents asking for consent for children to undergo the Schick test. A perturbed mother of two boys replied: "I refuse positively. I have read the book and seen the play and I don't approve of them."

A pamphlet about diphtheria has been sent her.—*St. Paul Dispatch,* Feb. 15, 1927.

COMPETITION

"Yes," said the specialist, as he stood at the bedside of the sick purchasing agent, "I can cure you."

"What will it cost?" asked the sick man, faintly.

"Five hundred dollars."

"You'll have to shade your price a little," replied the purchasing agent; "I had a better bid from the undertaker."

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

STRANGULATED HERNIA THROUGH THE FORAMEN OF WINSLOW

REPORT OF CASE

E. K. Green, M.D., F.A.C.S.
Minneapolis

The following is a report of a patient referred to me by Dr. C. G. Salt, my associate, for operation, together with a brief survey of the literature and a few points concerning the etiology, diagnosis, prognosis and treatment.

A. W., male laborer, aged 42, Scandinavian, was tall, rawboned and apparently in good health.

Family history.—Negative.

Previous history.—He had enjoyed good health with the exception of occasional gastric disturbances which at times suggested a possible peptic ulcer. Nothing similar to the present illness, however, had been experienced.

Chief complaint.—Pain in the upper abdomen, vomiting and constipation.

Present illness.—On Wednesday evening, January 20, 1926, following a fairly heavy meal, the patient states that he was seized with sudden severe abdominal pain followed in fifteen or twenty minutes with vomiting and retching. Later in the evening a physician in the neighborhood was called who diagnosed gallstone colic and gave him a hypodermic which relieved him for the night. During the next two days he had occasional paroxysms of cramps and vomiting but needed no medical attention until January 23rd, when Dr. Salt saw him and sent him to the hospital.

Physical examination.—The general appearance of the patient was fairly good considering the length of time he had been sick and unable to eat. He was quiet except during paroxysms of pain and retching when he would raise a cupful or less of dark, foul-smelling fluid. His color was poor and his face had an anxious expression. He was considerably desiccated though his skin was quite moist. His abdomen was not particularly distended except in the epigastrium. He complained of pain in the left side of the neck and lay on his left side, doubled up as much as possible, and complained bitterly at any effort to turn on his back or the other side. His temperature was 98, pulse 80 and respiration 20. His pulse was not of a very good quality. Leucocyte count was 7,500. Urine, Sp. Gr. 1.026, contained a slight amount of albumin, a few casts and no sugar.

An enema was given with very good results.

After two hours observation decision to operate was made on the following points:

1. The man had been in good health until the onset of symptoms Wednesday evening, except for stomach trouble.

2. No other member of the family had been taken sick following the same meal.

3. Continued paroxysmal vomiting had been present from the onset.

4. Pain and cramps in the abdomen were somewhat spasmodic although not very severe.

5. Fullness, tumefaction and tenderness were present in the epigastrium.

6. The pulse was becoming distinctly more rapid.

At operation a mid-line incision was made from the xiphoid cartilage to a point 4 or 5 centimeters below the umbilicus. Much bloody fluid escaped and dark intestines presented at once. Investigation showed that about three feet of the lower jejunum had passed through the foramen of Winslow and out through a defect in the gastro-hepatic omentum so that the completely obstructed portion of the gut laid out over the lesser curvature of the stomach. With a small hook retractor we were able to lift up the anterior border of the foramen and stretch the ring so that with considerable difficulty we were able to reduce the distended portion of the gut. The dark mahogany color of the bowel began to improve as soon as it was released, but because of the length of time which had elapsed since the beginning of his illness we did an enterotomy and quickly and easily emptied the damaged gut well back to the duodenum. The abdomen was closed with drainage. The patient suffered much greater shock than is usual for a similar amount of strangulation. He took large quantities of hypodermoclysis but in spite of all we could do with stimulants or otherwise he grew steadily weaker and died about thirty-six hours later. Privilege of necropsy was denied.

In the survey of the literature I find that Dr. Alfred Ullman of Baltimore in February, 1924, published an article in *Surgery, Gynecology and Obstetrics* in which he reported a case of his own and gave a very complete report of twenty-nine other cases prior to that date. Since then five others, including my own, have been reported. Dr. Exel Westman of Sweden, Dr. M. E. Foster of Fort Smith, Arkansas, Dr. J. E. Engstadt of Fargo, N. D., and Dr. J. B. Deaver of Philadelphia, have each reported a case.

In going over these cases, there are several points of interest which I think ought to be noted.

Blandin in 1824 reported the first case which was found at autopsy and from that time until 1888, seven cases were reported by various authors, all found at autopsy. In 1888 F. Treves of London reported the first case operated and since then all but three cases reported have been operated. Of the twenty-four cases operated, ten have recovered and fourteen have died. No case has been diagnosed preoperatively. The length of time from the onset of symptoms until operation is also quite significant. In those cases that recovered, it ranged from a half to twenty-eight days with an average in all cases of nine days, and with those that died from a half day to twenty-one days with an average of five days. From this one would be led to believe that the strangulation was of a slow development.

The amount of gut found strangulated is extremely variable, from a small knuckle to nearly the entire large and small bowel combined. The reports seem to show that the cases with the better prognosis have been those where the bowel strangulated was farthest from the stomach. Age is unimportant as the cases seem to be equally distributed between five and seventy-five years. No case has been reported as congenital. There were about four times as many cases in men as in women.

Etiology.—The location of the foramen of Winslow in the upper abdomen undoubtedly has a great deal to do with the rare occurrence of a hernia into the lesser peritoneal sac, as the opening is constant normally in all individuals. Piersol, the anatomist, gives the only anatomatical reason I could find and that is a long mesentery of the gut. As an exciting factor the report shows that straining and violent exercise, often following ingestion of a full meal, are the most important.

Diagnosis.—Though the diagnosis has never been made preoperatively, I would say the extreme rareness of the condition is the greatest reason. The condition is most readily confused with acute gastritis, acute inflammation of the gallbladder, or pancreatitis. However, with the slow development which is so frequently reported, the use of the *x*-ray and more careful observation and clinical study should make it possible to make a preoperative diagnosis.

Prognosis.—As in other forms of strangulation, early diagnosis and early operation are of the greatest importance. Strangulation in the jejunum or upper lobe is not well borne and in only one of the cases reported that recovered was any considerable length of the jejunum involved. Trauma to important structures surrounding the foramen of Winslow during operation should also be considered in making a prognosis in any given case.

Treatment.—The technical part of the operation in one of these cases is particularly hazardous because of the important structures contained in the constricting ring. Ofttimes the operator has been able to stretch the ring sufficiently to withdraw the gut, but if this cannot be done without too much trauma the lesser peritoneal sac should be entered either through the gastrohepatic omentum or below the stomach in whatever place offers the easiest access and the gut should be emptied or dealt with in whatever way is necessary.

CONCLUSIONS

1. Strangulated hernia through the foramen of Winslow is an exceedingly rare condition.

2. The condition is most frequently found in men and usually comes on after a severe strain or lifting or following the ingestion of a full meal.

3. It would seem that preoperative diagnosis should be made more easily than in other internal strangulated hernias.

4. The prognosis is grave but varies with the extent of the strangulation and its location in the intestinal tract.

5. Operation in the region becomes exteremely technical and difficult because of the structures bounding the foramen.

6. These cases are extrahazardous and all methods known to modern surgery should be employed to tide the patient past the critical stage.

TORSION OF HYDROSALPINX

REPORT OF CASE

Lee Monroe Miles, S.B., M.D., F.A.C.S.
St. Paul

Torsion of hydrosalpinx is not an exceedingly rare gynecological finding, yet its occurrence is sufficiently rare to warrant the presentation of a case and a discussion of the diagnostic points. Hydrosalpinx is one of the end-results of an acute salpingitis, but for the dilated tube to become twisted on its pedicle two conditions must obtain that account for the rarity of the condition: the hydrosalpinx must be free from peritoneal adhesions and it must be provided with an unusually free mesosalpinx. As a consequence of peritoneal inflammation a tube which has been the site of an acute salpingitis is usually so firmly bound to the surrounding structures by strong adhesions as to effectively preclude the occurrence of complication by torsion. The fact that a twisted hydrosalpinx is found at operation points to a very mild degree of salpingitis with less than the usual amount of pelvic peritoneal inflammation. The mesosalpinx is usually too short to admit of torsion. Though twisting of a normal tube has been reported, it is one of the rarest of all gynecological conditions.

This case is presented because of the very interesting problem it offered in differential diagnosis.

Case history.—Mrs. A. W., a married woman, aged 25, was first seen at home on May 16, 1927, at ten-thirty in the evening. She was suffering with extreme pain in the lower abdomen. The onset of the present attack of pain had occurred at about five o'clock in the afternoon of the same day. She had been feeling very well and was down town shopping when she was seized with a sudden, very severe pain in the lower abdomen, more marked on the right side. She did not faint but was unable to take the street car and had to call a cab to reach home. She went to bed and applied heat to the abdomen without relief. The pain was not paroxysmal in character but was constant and very severe.

Her general health had always been unusually good, she was always strong and active. She had given birth to a full term child that is now nine years of age. No other pregnancies had occurred. Menstruation was always normal and regular with moderate flow of the 28 day interval type lasting four days. The last regular period was on April 5, 1927. A period should have occurred on the third day of May, but was thirteen days overdue. Shortly after the attack of pain began she noticed that she was having vaginal bleeding rather more profusely than at her regular periods but still not an excessive hemorrhage. There was no history of any previous attack of pelvic pain to suggest a preceding attack of salpingitis. The puerperal period at the birth of her child was not complicated though she stated that she was up and about her work after the second day. The only history suggestive of any pelvic disorder was that her periods, which had formerly been painless, became painful after delivery.

Physical examination revealed a strong, robust patient very evidently suffering with excruciating pain. Her temperature was 98.6° and her pulse rate was 85 per minute. The abdomen was moderately distended in the lower portion and on palpation no masses could be made out though there was exquisite tenderness on pressure over the entire lower abdomen but more marked on the right side just lateral to the mid-line and above Poupart's ligament. Examination of the pelvis revealed a bloody discharge from the vagina, the cervix was lacerated, softening of the cervix was questionable and the external os was closed. The uterus was not palpably enlarged and was in second degree of retroversion. On the right side of the uterus there was a mass which was soft in consistency and very painful on pressure. Because of the extreme pain caused by pressure it was impossible to outline the uterus or the mass accurately, the slightest movement of the uterus or pressure in the right fornix causing pain and muscle spasm.

Differential diagnosis. Acute appendicitis could be ruled out on the suddenness of the attack, the character of the pain, the normal temperature and on the physical findings which pointed definitely to a pelvic condition. Acute salpingitis causes a marked rise of temperature, does not begin with the suddenness which marked this condition and does not cause such severe pain nor the extreme tenderness on palpation. The history of having gone thirteen days beyond her normal menstrual time is strongly suggestive of a pregnancy. Abortion was considered but the character of the pain, continuous and not paroxysmal, and the closed external os and the degree of pelvic pain are all against that diagnosis. This history and physical findings are perfectly typical of a case of ruptured ectopic pregnancy; the delayed menstruation, the sudden attack of pain in the lower abdomen, the onset of vaginal bleeding following the attack of pain, the tenderness in the lower abdomen and pelvic organs, the mass to the side of the uterus, the distension of the lower bowels pointing to peritoneal irritation, the very fact that she had gone a number of years without a pregnancy shows at least a relative sterility which is a point in favor of possible interference with descent of the ovum. Only one other condition could give the same clinical picture—torsion of either a tube or ovary. In favor of torsion of a

tube is the fact that a sterility of nine years duration points not to a relative sterility but to absolute sterility with occlusion of the tubes. Against this diagnosis is the absence in the history of any indication of a preceding salpingitis. Again, the delay in the onset of her menstruation and the appearance of bleeding after the onset of pain are certainly much more in favor of an ectopic pregnancy than torsion of a tube. Torsion of an ovary is very rare unless there is a cyst present of some size and in this case the mass felt per vagina did not have the consistency of an ovarian cyst and was smaller than one would suspect being an ovarian cyst with torsion, because an ovarian cyst must reach considerable size before the pedicle is elongated sufficiently to become twisted.

A tentative diagnosis was made of a ruptured ectopic pregnancy with the rather remote possibility of torsion of a hydrosalpinx. Immediate operation was decided upon and the patient was taken to Bethesda Hospital and was prepared for operation. The abdomen was opened by the usual mid-line subumbilical incision. On opening the peritoneum the sigmoid and descending colon were found to be moderately distended. No free blood was found. The cecum and appendix were normal. On exploring the pelvic organs the left tube and ovary were found to be bound to the rectum and uterus by dense adhesions; on the right side the distal one-third of the tube was enlarged and distended and free from adhesions. As this portion of the tube was brought up into sight it was at once noticed that it was almost black in color, and the mass, which was 4.5 cm. in length by 2.5 cm. in diameter, was almost rectangular in shape and was composed of numerous loculi filled with dark fluid. As it was exposed in the hand it uncoiled spontaneously revolving from right to left one complete turn. It was a follicular hydrosalpinx that had become twisted one complete turn on itself from left to right. The dark color was due to interference with circulation and to the extravasation of blood into the loculi. This portion of the tube projected beyond the infundibulo-pelvic ligament and had a very long mesosalpinx. The right ovary was enlarged, cystic and buried in dense adhesions. The operation was completed by removing the right tube and ovary, the left tube, and closing the abdomen in the usual manner. Convalesence was uncomplicated.

Pathological diagnosis of the specimen was chronic salpingitis of left tube, chronic salpingitis with hematohydrosalpinx of the right tube and corpus luteum cyst of the right ovary.

Discussion of the case. Torsion of an hydrosalpinx has rarely been diagnosed prior to operation, most cases having been discovered, as was this one, at operation for a supposed ruptured ectopic gestation. The history of the attack, the character of the pain and the physical findings are remarkably similar in both conditions. In ectopic gestation there is usually the history, as in this case, of delay in the onset of a menstrual period and of bleeding after the onset of pain, but in a fairly large proportion of ectopic pregnancies the tubal rupture or tubal abortion occur at or so near the regular menstrual date that this point is not of the greatest importance. I believe that for an absolute and final preoperative diagnosis of torsion of a hydrosalpinx to be made one would need to have direct evidence of a pre-existing hydrosalpinx or evidence from the history of previous attack of salpingitis and the assurance that a pregnancy could not have occurred corresponding with the possible duration of the disease. In this case there was no evidence of previous pelvic inflammation and the patient could not give me any assurance that pregnancy could not have taken place; in fact she had supposed herself to be pregnant. No explanation can be offered for the delay in the appearance unless the presence of extensive hemorrhage into the corpus luteum of the right ovary would account for it. I have frequently noticed that patients who have this condition are irregular in their menstrual habits.

Although the pre-diagnosis of these cases is difficult the all-important consideration is to recognize the urgency of immediate operation both to relieve the suffering of the patient and to guard against distastrous complications.

215 Hamm Building.

ACUTE INFECTIVE MYELITIS

REPORT OF CASE

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This is a case of acute transvere myelitis of infectious origin. The disease is relatively rare, no other cases having been recorded in St. Luke's hospital during the last four years. I will briefly review the history, findings and progress. An attempt will be made to explain these on the basis of the pathology.

R. J., white, a male student, aged 14; was first examined by me on April 13, 1924.

Present Complaint.—He complained of: (1) numbness in the feet; (2) tingling and pain in the lower extremities; (3) constipation; (4) fever.

Present Illness.—Numbness in the right foot, extending upward to the knee, began three days previous. He attended a movie in the afternoon, and was able to walk to and from the show. On the way home he developed some loss of power in the right leg. He became quite exhausted and went to bed in the afternoon.

The following morning about sixteen hours after the onset, both legs were equally involved. He was assisted into a chair and on attempting to stand, collapsed. He developed sensations of numbness and tingling at times and also stated that movements of the limbs became progressively more limited. Numbness became complete. Coupled with this, urinary dribbling was noted three days after the onset.

Past History.—His general health had always been good. In infancy he had been normal. Measles, chicken pox, sore throat, several years ago. Tonsillec-

tomy, 1918. The patient had a mild attack of *scarlet fever* two months previous (Feb. 1924). Recovery seemed uneventful. He tired easily following this illness.

He was *vaccinated* for small-pox (two weeks before). A marked reaction resulted. The arm swelled up to the shoulder and to half way between the elbow and wrist. He was bedridden for several days. The wound is now not quite healed. There was no history of previous injury.

Physical Examination.—The patient is a moderately developed male, lying quietly in bed. Pulse, 84, temperature 101.8, respiration 22.

Head and Neck: Scalp negative; eyes normal, pupils equal and react normally; ears and nose negative; tonsils out; pharynx normal; tongue heavily coated; neck not rigid.

Thorax: Symmetrical and fairly well developed.

Heart: Borders and tones normal; no thrill; no murmur; regular rate.

Lungs: Normal excursion; normal fremitus. Resonance not impaired. No râles.

Abdomen: Somewhat distended with hypogastric protrusion and tenderness. Swelling disappears upon catheterization. Sensory disturbance just below umbilicus.

Extremities: Upper, normal, except for vaccination wound, nickel sized, dirty and with indurated borders. Lower, normally developed, but with cutaneous anesthesia and flaccid motor paralysis.

Spinal Column: No abnormality noted.

Neurological Examination: Briefly illustrated in the accompanying chart.

Figure 1 will demonstrate the areas involved, with their cutaneous segmental arrangement according to Dana (Nervous Diseases, 1915, pp. 53-54).

Laboratory Findings.—

Urine: Negative except for trace of albumin developing after catheterization due to pus.

Spinal puncture: Not performed; deemed inadvisable.

Blood: Hemoglobin normal; w.b.c. 10,600 on entrance.

Complication.—After leaving the hospital he was kept in bed one month. At the end of this period he began passing calculi. At first they were small and soft, later larger and more firm. This was accompanied by dysuria and hematuria. Six months later with continuance of symptoms and without passing any more stones, removal of the two remaining stones (Fig. 2) was deemed necessary. These were found to be mainly calcium carbonate on chemical analysis. The operation consisted of a simple supra-

CHART I

Symptom	Initial	3 days later and lasting 4 days	3 weeks later	6 weeks later	2 years later
Paresis	+	0	+	Dim. +	0
Paraplegia	0	+	0	0	0
Numbness	+	0	+	0	0
Anesthesia	0	+	0	0	0
Cutaneous Reflexes:					
1. Abdominal	Dim.	0	Dim.	+	+
2. Cremasteric	Dim.	0	Dim.	+	+
3. Tickle-Stroke and Col.	Dim.	0	Dim.	+	+
Tendon Reflexes					
1. Patellar	Dim.	0	Dim.	Normal	Increased ?
2. Achilles	Dim.	0	Dim.	Normal	Increased
3. Ankle Clonus	Dim.	0	Dim.	Normal left ++ right	0
Disturbances of Rectum & Bladder	0	+	Dim.	Dim.	None
Trophic-Changes	0	0	0	Slight	Not noticeable
Babinski	+	+	+	0	0
Oppenheim	+	+	+	0	0

pubic cystotomy and closure without drainage. The wound healed by primary union. He was discharged from the hospital in good condition.

Treatment.—This consisted mainly in cleanliness and posture to prevent bedsores, cystitis and pneumonia. Urinary antiseptics were given. At first he was catheterized every eight hours. Later, an indwelling catheter was inserted. A pillow was placed under the knees. The feet were kept at right angles to the legs. A cradle supported the bedclothing over them. Massage

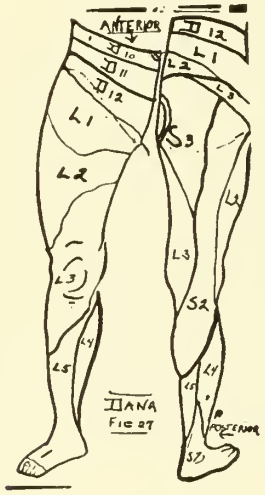

Fig. 1

Fig. 2

and passive movements were begun three weeks after the onset.

Diagnosis.—Acute infective myelitis (transverse); urinary calculi.

Differential Diagnosis.—The differential diagnosis from: (1) *tumor of the cord* is made by the history of preceding infection, the acute onset and the rarity of tumor in youth; (2) *poliomyelitis* because of the presence of a complete transverse lesion with motor and sensory involvement; (3) *simple hemorrhage* with compression by the absence of any history of injury; (4) *Landry's paralysis* by the present of fever and anesthesia, and also by the fact that there was no sphincter control here; (5) *multiple neuritis* of pernicious or hemorrhagic type by the fact that there were few sensory prodromal symptoms. Also, the hips and trunk were involved and these usually are skipped in multiple neuritis. Further the involvement of the sphincters, the complete cutaneous anesthesia below a definite level do not coincide with a diagnosis of multiple neuritis.

An explanation of the symptoms on a pathologic basis is presumptive because the patient recovered. Bell[1] defines a transverse myelitis as one "which is limited to from one to four segments of the cord and which involves the transverse area of the cord within these limits more or less completely." We can assume, first, that the origin was infectious and hematogenous, due to the history of previous scarlet fever and virulent infection following vaccination.[2] Anatomically it is known that the lumbar cord is more vascular than other portions.[3] Below the level of the second dorsal root, the branches supplying the cord are derived from the thoracic and abdominal aorta. According to Dana,[4] at or a little below where the blood supply changes from the subclavia above the heart, to the aorta below, transverse myelitis frequently occurs. Both peripheral and central arterial systems are made up of end arteries. Neither of them, however, are distributed in accordance with anatomic relations or physiologic functions. Each cell group has a vascular supply from various sources.

In order to account for the rather sudden complete transverse lesion with subsequent recovery, one must assume that the initial invading infectious agent was small, but of marked virulence. Further, it must be remembered that the patient was youthful. Therefore, with a minute focus, implanted in a vascular area, in a patient fourteen years of age, one would expect a marked local reaction. The latter occurred in the form of a cellular exudate and, more important, a marked edema. The progression and regression of this compressing fluid seems a logical explanation of the course of the disease in this case.

The patient as now seen, two years later, shows no demonstrable functional disability. He has noticed no weakness in the involved area and sensation is normal. From personal observation, it seems that development in the involved areas has kept pace with that elsewhere. He occasionally experiences a quick involuntary muscle jerk. There is no appreciable muscle atrophy. All former evidences of cord lesion have disappeared.

Summary.—

This case is of interest because of: (1) The evident infectious origin; (2) the marked reaction to bacterial invasion causing a complete transverse lesion; (3) the subsequent formation of multiple vesical calculi; (4) because acute transverse myelitis with functional recovery is rare.

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PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL
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THE TREATMENT OF TETANUS: Samuel Oscar Freedlander (Ann. of Surg. 85, 1927, 405-409). Twenty-five consecutive cases of tetanus are reported. These were treated uniformly and the results analyzed. It is generally agreed that antitoxin is the only measure which has thus far offered any hope of success in the treatment of tetanus. The gross mortality rate in pre-serum days, that is before 1896, was 75 to 85 per cent. Since the use of antitoxin has become widespread and especially in recent times when large doses have been used, the reports of tetanus cases show a lowered mortality rate. The inverse relation of the incubation period to the mortality rate has long been known, the longer the incubation period, the lower the death rate.

When prophylaxis does not prevent tetanus it has the effect of prolonging the incubation period and also increases the incidence of local tetanus, both of which reduce the gross mortality rate.

In the series reported the wound was treated locally by removal of all devitalized tissues and the injection of a small amount of antitoxin around it. Within the first twenty-four hours, a total of 50,000 to 150,000 units of antitoxin was given intravenously, divided into three to five injections, and thereafter a daily dose of 15,000 to 150,000 units was given in from two to three injections. Morphine was given every six hours hypodermically, and chloretone every six hours by rectum.

The aim of the treatment should be to maintain a high concentration of antitoxin in the blood in order to neutralize whatever toxin is already there and also that which is being given off from the focus of infection. Thus the toxin would be neutralized before being taken up by the nerve endings. Intra-spinal injections, he believes, have no advantages over intravenous ones.

The gross mortality rate was 36 per cent. In the eleven cases with an incubation period of less than ten days, 45.5 per cent died; in the eight cases with an incubation period of over ten days, 12.5 per cent died. Six patients died within the first twenty-four hours after admission to the hospital. If we exclude these, the mortality rate would be only 12 per cent. He believes that this relatively low mortality rate adds to the impression that tetanus antitoxin given in large doses has some therapeutic value. He concludes that it is probably not necessary to continue the use of the antitoxin longer than six or seven days.

HAROLD E. SIMON, M.D.

CONGENITAL ATRESIA OF THE ESOPHAGUS WITH ESOPHAGEAL DIVERTICULUM AND TRACHEO-ESOPHAGEAL FISTULA: Herbert H. Holderman (Archives of Surgery, 1927, 14, 917-920). Two hundred and seventeen cases have been reported in the literature and the author reports an additional one. This apparent rarity is probably due in part to failure in diagnosis.

The trachea and larynx are developed as an outgrowth from the entodermal alimentary canal. The first step in the development of the pulmonary system is a pouching of the ventral wall of the esophagus throughout its entire length. This groove deepens until its edges meet and fuse to form a separate tube, which later bifurcates. The trachea is the elongated stalk of the pulmonary system. Interference of mesoderm with entoderm at the junction of the trachea with the esophagus explains the causation of fistula.

The case reported was a baby girl who developed attacks of cyanosis. She would not take nourishment and there was considerable mucus in the mouth and throat. On fluoroscopic examination, barium milk mixture did not enter the stomach but collected in a pouch-like enlargement of the esophagus which extended down to third rib anteriorly.

A diagnosis was made of congenital atresia of the esophagus with a diverticulum and a gastrostomy was performed but the patient died. At necropsy this diagnosis was confirmed and a fistula was demonstrated between the esophagus and the trachea, accounting for the spells of cyanosis.

HAROLD E. SIMON, M.D.

THE TREATMENT OF ACID AND ALKALI BURNS: Edward C. Davidson (Annals of Surgery, 1927, 85, 481-489). Although acid and alkali burns of the skin are of frequent occurrence, the treatment of such lesions has not received the critical attention which it merits. The skin is protected by a resistant horny layer of cells whose vulnerability is further lessened by its normal oily secretion.

Acids and alkalies produce changes in the tissue which are similar to those caused by heat. The former may be progressive while heat burns are more or less self-limited.

There has been a difference of opinion regarding the efficacy of neutralization in contradistinction to simple dilution with water.

In his experiments, the author used rats, exposing them to different alkalies and acids in different concentrations for variable periods of time.

The results of the experiments were quite uniform. In every instance the rats which were washed thoroughly with water survived longer than those which were treated by neutralization, and the local lesions at any given period after exposure to the caustic revealed less evidence of irritation than those which were treated by neutralization. The striking difference in the results of treatment by the two methods may be due to the additional trauma of heat of neutralization. Heat of dilution must also be considered, but when running water or a large amount of water is used, this heat is promptly carried away.

No experiments were made to determine if any further improvement could be obtained by neutralization of any of the acid or alkali which may still be present after vigorous washing, but its dilution is so great that it is problematic whether it can cause further tissue injury.

HAROLD E. SIMON, M.D.

TREATMENT OF INFECTIONS OF THE FACE: John W. Price, Jr. (Annals of Surgery, 85, 1927, 329-332). The treatment of infections of the nose, upper lip and face differs from the treatment of other infected areas on account of the anatomy of these parts. From these infections bacteria readily enter the facial veins, which have no valves, thence to the ophthalmic vein and the cavernous sinus; or via the pterygoid plexus to the cavernous sinus, or may pass from the facial vein to the external jugular.

The serious nature of these lesions was recognized 74 years ago, and later autopsies have shown that patients dying with facial infections showed thrombophlebitis of the facial and jugular veins, thrombosis of the cavernous sinus, septicemia, pyemia and lung abscess.

The author reports six cases and discusses the treatment, which may be outlined according to the degree of infection. First, the initial lesion; second, the period of extension; and third, the period of thrombophlebitis, embolism or septicemia.

First stage. The initial lesion is usually confined to a hair follicle, sebaceous gland or sweat gland. The treatment consists largely of "don'ts"—don't squeeze, pick or cut. Apply alcohol or mercurochrome every hour, and when definitely localized the necrotic area may be opened with safety.

The second stage develops when localization fails to occur and the infection invades the neighboring hair follicles and glands and a carbuncle is developing. If it has been opened there is almost no discharge and a small gray slough may be visible. Early incision, squeezing and probing not only fails to give relief but causes a further rapid spreading of the infection. The treatment consists in measures to build up general resistance and in local measures. During the first few days the one or more necrotic points are kept open and small wet compresses applied constantly. When the process has become localized, small multiple incisions may be made to connect the multiple openings toward the center and the compresses continued as before.

When seen in the third stage the prognosis is usually hopeless. Intravenous injections of gentian violet and mercurochrome have been suggested and general measures should be carried out.

HAROLD E. SIMON, M.D.

END-RESULTS OF CHOLECYSTOSTOMY AS SHOWN BY THE CHOLECYSTOGRAM: Roy G. Spurling and Lester R. Whitaker (Surg., Gynec. and Obstet., 1927, 44, 463-467). Cholecystograms by the intravenous injection of sodium tetraiodophenolphthalein were made on twelve patients whose gall-bladders had previously been drained. The interval elapsing between the operation and the cholecystography varied from 25 days to 19 years.

None of the twelve patients had normal gall-bladder shadows. Four showed a recurrence of calculi as proved by a second operation and two more showed markedly thickened, sclerotic gall-bladders.

Animal experiments were undertaken to determine just what part of the pathological process is responsible for any alteration in the cholecystogram. In some animals the gall-bladder was opened and curetted and then closed with or without drainage. In others, the entire mucous membrane was removed. Cholecystograms were taken at intervals after operation.

The results of the experiments indicate that the mucous membrane is the necessary factor for the concentration of the dye in the gall-bladder. The emptying of the gall-bladder after the ingestion of fat was also inhibited, due to injury to the musculature.

In conclusion it would seem that the drainage of a diseased gall-bladder with the expectation that it will regain its normal function is not only a futile procedure but one that endangers the future health of the patients.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

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CLINICAL NOTES IN A SERIES OF PREMATURE INFANTS: Louis Fischer, M.D. (Archives of Pediatrics, April, 1927). One of the most difficult problems in infant feeding is the management of the premature. The continuous inhalation of oxygen night and day was one of the most valuable therapeutic agents in this condition. It is difficult to express an opinion in the premature infant under four pounds, as to whether transfusion should be a routine procedure or not.

At the end of the third week, a premature infant received seven ounces of breast milk in 24 hours and, owing to the stationary weight, karo 1 dram was added to each feeding. By increasing this carbohydrate the child gained two ounces in a week.

The transfusion of the whole blood was the important factor that aided nutrition and helped to metabolize the food in one case. The circulation improved; the cyanosis disappeared; the appetite increased.

The addition of four doses of insulin aided metabolism to such an extent that the author noted a gain usually at the end of one week but in most cases at the end of two weeks. Another symptom noticed with a series of cases of atrophy was an increase in appetite when insulin was ordered. One must individualize and study the case before deciding on a given feeding.

The protein tolerance and especially the fat tolerance was different in most infants while the carbohydrate tolerance was usually excellent.

R. N. ANDREWS, M.D.

THE CRYING INFANT: Samuel Allison Rose, M.D. (Archives of Pediatrics, 1927). 1. *Hunger.*—In breast-fed infants, weighing before and after each nursing for a whole 24 hours must be the rule. If the amount taken in comes below or just above the bare minimum expected, complementary feeding should be instituted.

2. *Indigestion.*—In the breast-fed, this is apt to be due to high fat content. This is the type of child that cries one to two hours after nursing. Here diluting the breast milk with water given before the nursing or diluting the expressed milk in a bottle will often remedy this disturbance. In the bottle-fed, either the fat or carbohydrate is usually at fault.

3. *Thirst.*—It is remarkable how many mothers are astounded by the information that their offspring get thirsty and want water. This lack of water is more prevalent in breast-fed than in bottle-fed babies.

4. *Excessive Warmth.*—Swathing the infant or maintaining a high temperature in the room, or both, because of the fear of the child catching cold, is responsible for more fussing and fretting than is commonly credited.

5. *Bad Habits.*—The process of "spoiling" is the attempt of the solicitous mother or nurse, without determining the cause of the discomfort, "to do something" for a baby that is crying. After a time a vicious cycle is set up.

6. *Nervousness.*—There is a small but troublesome class exhibiting the symptoms grouped under nervousness. Very frequently nothing but the installation of a sympathetic, intelligent nurse in the place of the worrisome, panicky mother is the only means of alleviation.

R. N. ANDREWS, M.D.

STUDIES ON EXPERIMENTAL RICKETS: E. V. McCollum, Ph.D., Sc.D., Nina Simmonds, Sc.D., J. Ernestine Becker, B.S., and P. G. Shipley, M.D., (Amer. Jour. of Diseases of Children, February, 1927). The numerous studies on the dietary properties of milk have established the fact that vitamins A, B and C, when present in the diet of the lactating female, pass readily into the milk

It is clear from experiments that the diet of the pregnant and nursing mother is of paramount importance in determining the quality of milk which she will produce. The authors have demonstrated that when female rats are fed cod liver oil before mating, during pregnancy and during the first two weeks of nursing—that is, the little rats themselves did not eat of the cod liver oil ration—the young are afforded an easily demonstrable protection against rickets.

It is also demonstrated that even though the mother and young take a diet which induces excellent growth, fertility and the rearing of a large majority of the young, that is, one containing satisfactory protein, mineral content, vitamins A and B and a small amount of vitamin D, it does not necessarily induce sufficient vigor in little rats to enable them to withstand the effects of a severe rickets-producing diet.

Provision of a diet which is so constituted as to insure good quality of the mother's milk, including a considerable amount of the antirachitic vitamin D, will tend markedly to safeguard the vitality and development of the young during the early weeks of life. The prevalence of rickets among both breast-fed and bottle-fed infants may in part be due to the unsatisfactory condition of the expectant and nursing mother brought about by an unwise selection of food. It seems justifiable, therefore, to insist on the importance of the expectant mother and the nursing mother taking suitable amounts of cod liver oil, as well as the importance of giving it to the infant.

It is not to be expected that a pale, anemic, frail woman, whose vitality has been undetermined by faulty living, should be successful in trying to build herself up by a dietary reform early in pregnancy. It is much easier to maintain than to regain health.

R. N. ANDREWS, M.D.

CHOREA—A Brief Clinical Study with Special Refcrence to the Use of an Immune Serum: Jesse R. Gerstley, M.D., with the assistance of L. J. Wilhelmi, M.D. (Amer. Jour. of Diseases of Children, April, 1927). It is not the authors' purpose in this article to support or to refute the idea of the streptococcic origin of chorea; the argument would readily be raised that the organisms they obtained from cultures of the nasopharynx were not the true organisms of chorea. In view of the foregoing observations and the lack of any evidence of really severe infection in any of the series, however, one is almost tempted to advance the hypothesis that there are two kinds of chorea, one of definite infectious origin and another due to the overtaxing of a predisposed nervous system through overwork and overstudy. At any rate, their studies have proved definitely the following:

The monovalent serum in its present form is of no clinical value in the treatment of chorea.

There is great variation in the types of streptococci produced from cultures by ordinary methods in the throats of patients having chorea.

A monovalent serum prepared by the use of the Rosenow chorea streptococccus in not absolutely specific but does agglutinate other types of streptococci.

Tonsillectomy apparently did not have any influence on the course of the disease or on the development of recurrences, though the authors are not prepared to state its influence on the development of complications.

R. N. Andrews, M.D.

GONORRHEAL VULVOVAGINITIS IN THE YOUNG: Stephen A. Yesko, M.D. (Amer. Jour. of Diseases of Children, April, 1927). Vulvovaginitis in the young results from indiscriminate contact with adults.

On account of the extreme contagiousness of the disease, it is difficult to control.

The microscope is the essential part of every diagnosis.

The attitude of the physician should be one of help and education.

Successful results depend not so much on the kind of medicament used as on the method pursued.

Daily instillation of some form of gonococcide by the physician or nurse and frequent cleansing by the mother are the best forms of treatment.

R. N. Andrews, M.D.

PHOSPHORUS IN RICKETS

The reports in regard to the efficacy of elementary phosphorus in rickets are surprisingly contradictory. Experiments have been carried out, however, which show that elementary phosphorus has no significant healing potency in rickets. (Jour. A. M. A., Dec. 18, 1926, p. 2094.)

ROENTGENOLOGY

SUPERVISORS:
LEO G. RIGLER,
MPLS. GEN'L HOSPITAL, MINNEAPOLIS
A. U. DESJARDINS,
MAYO CLINIC, ROCHESTER

THE PRESENT STATUS OF CHOLECYSTOGRAPHY AND REMARKS ON THE MECHANISM OF EMPTYING OF THE GALL BLADDER: Graham (Surg., Gynec. and Obst., Feb. 1927). Cholecystography has reached its third birthday. During this time it has attracted wide attention, both in America and abroad. Both the intravenous method and the oral method have been popularized, and both have been found very reliable, with a higher diagnostic accuracy, however, being attributed to the intravenous method. A tabulated summary of the results obtained by leading observers is presented.

The phenoltetraiodophthalein has been used by the author in his most recent scries of cases, and a lower toxicity is attributed to it as compared with its isomer, tetraiodophenolphthalein.

Cholecystography has likewise provoked a very animated search for the mechanism of emptying of the gall bladder. This work consists of further careful studies of the anatomy of the gall bladder, the bile ducts, and of the sphincter of Oddi, and of functional studies in man and in the laboratory animal. Whitaker has demonstrated that intrinsic contractions of the gall bladder do occur, but this has not been proven to be capable of emptying its contents. The author's own investigations and those of his co-workers substantiate his previous assertion that "the gall bladder empties itself of its contents through the cystic duct by the washing out of its contents by bile from the liver, by the elasticity of contractile mechanism of its walls, and by variations of intra-abdominal pressure." He concedes that, in the light of the newer evidence, a larger rôle might have to be ascribed to muscular contraction.

Walter H. Ude, M.D.

MALIGNANT TUMORS OF FATTY TISSUES: Seids and McGinnis (Surg., Gynec. and Obst., Feb., 1927). A fairly extensive review of the literature has been made, and five additional cases of liposarcoma are reported. Very often lipomata found in the retroperitoneal and intermuscular regions pursue a definitely malignant course, recurring as fibrolipomata or liposarcomata. Occasionally subcutaneous lipomata manifest the same tendency. The highly malignant nature of these tumors is not properly appreciated. They should be dealt with radically, as in the case of other malignant neoplasms, by thorough extirpation followed with *x*-ray.

Walter H. Ude, M.D.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

THE INTERNATIONAL MEDICAL ANNUAL. A year book of treatment and practitioner's index. 45th year, 1927. Cloth, $6.00. 560 pages. Illus. New York: William F. Wood & Company, 1927.

DISEASE OF THE SKIN AND SYPHILIS. Albert Strickler, M.D., Professor of Dermatology and Syphilology, Temple University, Department of Medicine, etc. 689 pages. Illus. Cloth, $8.00. Philadelphia: F. A. Davis Company, 1927.

HANDBOOK OF DISEASES OF THE RECTUM. 4th edition, revised and re-written. Louis J. Hirschman, M.D., F.A.C.S. Price $6.50. St. Louis: C. V. Mosby Co., 1926.

As stated by the author in the preface to the first section this is a working handbook of the more common diseases of the rectum and anus, more particularly for the busy general practitioner. Years of experience, together with a respect for both the patient's feelings and tissues, have rendered Dr. Hirschman especially well qualified to give advice on a subject which is usually passed over all too lightly.

Following a short chapter on anatomy and one on symptoms, comes the first important part of the work, explaining and emphasizing the various examination procedures. Instruments, position and methods of examination of the various rectal and sigmoidal conditions are given in detail and fully illustrated.

Local and sacral anesthesia are dealt with, including the use of novocain and quinine urea hydrochloride. The technic of sacral anesthesia is shown by a series of excellent cuts. The use of local anesthesia in minor office procedures is given fully.

Constipation, obstipation and fecal impaction are dealt with from the standpoint of physiology of defecation, etiology, and treatment, and illustrated by a series of x-ray photographs.

The chapter on pruritus is rather brief when one considers the aggravating persistence of the condition, and yet, its relative infrequency compared with the other more common maladies taken up, possibly does not warrant more space. Suggestions are given as to topical applications, and also several illustrations of the various surgical methods of effecting a cure, most of which are modifications of Ball's operation.

Anal fissure, ulcer, and abscess of the ano-rectal region are well described and exceptionally well illustrated with drawings and photographs. The many types of fistulæ, their diagnosis and treatment are shown by clear cut diagrams, drawings and many actual photographs.

The subject of hemorrhoids quite legitimately occupies more space than any other single subject. The various operative methods are described and shown by drawings which render them readily understandable, and the injection treatment is given in detail.

Polyposis, papillitis and cryptitis are dealt with in the next chapter. There is a short chapter on sigmoiditis and then follows lengthy discussion of dysentery by Jelks, listing the various types and measures for their relief. The last chapter is on prolapse of the anus and rectum.

The outstanding feature of the book is the illustrations, which are numerous and extremely good. The subjects are dealt with briefly, since it is, as its name shows, a handbook, but in a manner which makes it easy to read and easy to remember. It is a work which should be exteremely valuable to anyone doing general medicine or surgery.

HAROLD E. HULLSIEK, M.D.

THE CULTS. Annie Riley Hale. $2.00. New York: National Health Foundation, 1926.

To see ourselves as others see us is never entirely pleasant but when the reflected image is untrue and distorted it gives us real offense. Here the medical profession is shown as it appears to exponents of medical cults by Mrs. Hale, who admits that she attacks allopathy because it failed to cure her son. She promises to answer Morris Fishbein's "Medical Follies" but after asserting that homeopathy is not a cult, justifying osteopathy, chiropractic, Abrams electrical reactions and decrying vivisection, she wanders far afield and discourses upon Coué, Christian Science, medical publicity, state medicine and Henry Ford's Hospital, which she claims failed in its original purpose because it did not embrace diet and nature-cure.

In no uncertain terms the author denounces Morris Fishbein's personal appearance, the germ as the cause of disease, vaccination and the motives of medical men. She quotes, from various well known medical authors, statements about the low percentage of correct diagnosis and the inability of doctors to cope with many diseases, and asserts that cancer may be cured by proper diet. She further says, "Upon the basis of their own records and admissions the medical profession has created for the human race far more suffering than it ever relieved it of," and "The smug organization of doctor politicians known as the A. M. A. are playing a double leader rôle as guardians of the people's health and sales agents for the vaccine-serum interests."

This book is not an answer to "Medical Follies" in any sense of the word but is merely a fanatic's attempt to relieve her mind of a bitter grudge toward the medical profession. It is not worth shelf space or the few hours necessary for its perusal.

MARGARET WARWICK, M.D.

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING. Oscar W. Bethea, M.D., Ph.G., F.C.S. Fourth Revised Edition. Illus. 498 pages. Philadelphia: F. A. Davis Co., 1926.

This book is valuable as a reference book on drugs. There is a valuable chapter on prescription writing, but otherwise nothing any newer or better than can be obtained from any one of a hundred others.

WILLIAM W. MOIR, M.D.

THE PRACTICE OF PREVENTIVE MEDICINE. J. G. Fitzgerald, M.D., LL.D., F.R.S.C., Peter Gillespie, M.Sc., C.E., M.E.I.C. and H. M. Lancaster, B.A.Sc. 2nd edition. 792 pages. Illus. Cloth, $7.50. St. Louis: C. V. Mosby Company, 1926.

Beginning with the prenatal period, the author presents all subjects and conditions having any relation to preventive medicine even the problem of housing with its environment and legislation relating to the employment of children. Each topic is comprehensively and individually treated under its own heading. The book is well illustrated with pictures, charts and diagrams, and references are freely quoted.

In the chapter on communicable diseases the author emphasizes the necessity of early isolation of suspected cases until the diagnosis is positively made, also making all the recently discovered tests in diagnosis so that effective treatment may be instituted the earliest possible moment. Stress is laid on the danger from nose and throat discharges, from droplets spread by sneezing, spitting or coughing, or carried on the hands. The reference to infants and small children being infected by older children or adults arouses one's pity for these innocent victims.

Communicable diseases are divided into six groups according to the mode of transmission:

1. By secretions from nose, throat or mouth
2. By food or drink
3. By insect borne
4. By contact
5. By unknown etiology
6. By germs from the soil

Each disease is considered from the standpoint of incidence, etiology, modes of transmission and method of control, including the public health regulations ordinarily employed to prevent spread of the disease.

The chapters on water and milk include a description of normal constituents, analysis and dangers of contamination and infection, with instructions for purification. Examination is divided into five steps: (1) Physical, (2) biological, (3) chemical, (4) sanitary survey and inspection of the source and (5) epidemiological evidence.

The simple food supply of the primitive races is contrasted with our complicated foods. The constituents of a well balanced diet are given as well as the comparative number of calories required in the different occupations. The comparison is well brought out in a table which shows that the sawyer requires the greatest number of calories per hour of work, 476, while the seamstress requires but 86 calories per hour of work. The body loses energy in the form of heat and partly in the form of mechanical work. The exertion involved merely in sitting up requires extra metabolism of four calories per hour. Dietary deficiencies, besides causing certain diseases, result in various degrees of retardation of growth, as may be noted among the poor in the European slums. An example of insufficient energy in the diet was the "war edema."

Fatigue is one of the chief problems in industrial hygiene because it reduces, more than any other single factor, the efficiency and is the greatest predisposing condition for actual disease. Workers suffering industrial fatigue may or may not feel tired but their capacity for work is steadily diminishing from day to day. The cause for fatigue is obviously complex. The chief measures adopted to prevent fatigue are (1) reduction in hours, (2) rest periods and (3) posture.

To one interested in any phase of the practice of preventive medicine there is valuable information put into interesting reading in this volume.

Nellie N. Barsness, M.D.

MEDICAL DIAGNOSIS. For the Student and Practitioner. Charles Lyman Greene, M.D., Chief of Staff St. Luke's Hospital, St. Paul. Sixth edition. Cloth, $12. Pp. 1468, with 723 illustrations. Philadelphia: P. Blakiston's Son & Co., 1926.

This book has enjoyed six editions. Each edition has been a definite improvement over the preceding. This edition consists of 1468 pages. It covers thoroughly and completely the entire field of medicine and includes all the newest and latest means of diagnosis, simply explained so as to be easily grasped by the busy practitioner. The section on heart and heart diseases is particularly strong, nearly 400 pages being devoted to this important part of medical diagnosis. The book is splendidly illustrated with plates and diagrams which add much to the lucidity of the text. The book is margined throughout, in which the important items are placed in heavy print, making a rapid perusal possible, and still obtaining the essentials. This also makes it easier for an individual interested in only one part to get what he wishes in a short time.

One hundred sixty pages have been devoted to an index, which is most complete and also aids the reader in quickly reaching the information desired.

The author is to be commended on the completeness with which the subject is covered and upon the arrangement which makes it easy to obtain information rapidly. Charles Lyman Greene is professor-emeritus of medicine in the University of Minnesota and his knowledge of and intimate acquaintance with the practicality of each item contained in this splendid volume makes still more valuable its application to one's own clinical experience.

A. N. Bessesen, Jr., M.D.

FACTS ON THE HEART: Richard C. Cabot, M.D., Professor of Medicine and Social Ethics, Howard University. 781 pages. Illus. Philadelphia and London: W. B. Saunders, 1926. $7.50.

Dr. Cabot presents here a work of real merit, with many valuable and logical conclusions drawn from a vast and comprehensive fund of excellent material, but the reviewer is unfortunately disappointed with a statement on the opening page, "most heart disease is imaginary." Such a statement, with the certainly inadequate and unsatisfactory explanation appended, seems fraught with the possibility of lulling the honest practitioner who is examining a patient with an obscure

cardiovascular symptomatology into a sense of false security as regards disease of the heart, and in so doing may often prevent the careful consideration and observation of such a patient who may in reality be presenting himself with the earliest signs of cardiac damage, that stage which we so desire to recognize in all diseases. This impression seems to be in part traceable to the method Dr. Cabot has used in obtaining his material. It reflects the deductions of an analysis of pathological and clinical material from the post-mortem table to the beginning of his clinical records, in great part embracing terminal stages of disease predominantly, and giving little thought to those subjective symptoms as well as objective findings which would assist in early diagnosis.

The "facts" as Dr. Cabot presents them are clear and incontrovertible, if the limitations of their significance in early diagnosis are borne in mind. They are essentially statistical in character, and bring out many sources of error of omission or commission in physical diagnosis. They serve to call attention to many fine points in diagnosis which are of undoubted value, and to fix the reader's thoughts on the relative importance of the various cardiac disorders as a cause of death.

Dr. Cabot has here made a valuable contribution to our already large number of works on the heart, and great credit must be given him for the eminently successful accomplishment of so huge a task, a compilation well deserving the attention of the profession.

Joseph F. Borg, M.D.

GOOD LOOKS. Irwin Sutton, M.D. 100 pages. $2.50. Taft Building, Hollywood, California.

This attractive little volume is evidently intended to give scientific information to the feminine mind with its ever increasing interest in personal appearance. It is written by a dermatologist, former associate in dermatology in the Mayo Clinic and now located in Hollywood, so from both the nature of his specialty and his association with beauty he should know whereof he speaks.

The subject matter is good, what there is of it, but there are barely 86 pages of reading matter, which does not seem to be quite sufficient to justify a book at the retail price of $2.50. He briefly discusses the care of the skin of adults, old people and babies, the care of the scalp, the nails, the mouth and the body in general, even to directions for taking a bath. The "Alkaline Diet" and "Anti-Constipation Diet" are given, also chapters on Constipation, Douches and Syphilis with reasons for its treatment by a dermatologist. The last chapter is devoted to "Good Reading" and recommends further perusal of ten magazines, including "Hygiea" and ten books on diet, care of the body and syphilis.

Throughout the book the discussion is scientific, yet expressed in simple language easily understood by the laity, and many prescriptions for lotions, shampoos, and creams are given. For many of the latter, credit is given to friends practising in other cities. Also frequent advice is given to consult a good physician with reasons as to why it is best. The book will be of little interest to the reader who is a physician, but he may safely recommend it to his feminine patients, who will find in it accurate answers to the questions they usually ask of beauty parlor employees, and it may help to keep them from the clutches of the quacks and cults.

Margaret Warwick, M.D.

OSLER'S MODERN MEDICINE, Volumes I, II, III and IV, edited by Thos. McCrae, M.D. Philadelphia and New York: Lea and Febiger, 1925 and 1926.

This edition is a thoroughly revised and elaborated system based on the old standby originally published by Doctor William Osler. The various sections have been written by men of unquestioned ability in their particular fields and the volumes are the most complete and concise of any editions available.

Harry Oerting, M.D.

FOUNDATION OF HEALTH. William Barnard Sharp, S.M., M.D., Ph.D. 245 pages. Philadelphia: Lea and Febiger, 1924.

This little work of 245 pages, was designed for pre-Medical and Junior College Students. It is admirably written in a concise, interesting, and instructive manner. At the end of each chapter is given a list of citations, for collateral reading.

In consider this a very valuable little book for teachers and students. Reading it is a pleasure, and studying it would not be a formidable ordeal, but it contains little of especial value to the Physician.

J. C. Whitacre, M.D.

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MINNESOTA MEDICINE

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THE RELATIONSHIP BETWEEN BODY BUILD AND PHYSIOLOGICAL CHARACTERS IN UNIVERSITY STUDENTS

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The idea that the general build of the body is significant in medicine dates back to ancient times, as shown by the terms "habitus phthisicus" and "habitus apoplecticus." This doctrine was somewhat overshadowed by the rise of bacteriology during the past half century, but has recently been revived and is now being actively studied in relation to various phases of medicine. Clinical statistics and life insurance records seem to indicate that the body build, especially the height-weight ratio, shows a definite relation to mortality and predisposition to certain forms of disease. However, much of the medical literature on this subject lacks critical analysis and appears merely suggestive rather than conclusive in character.

If the bodily habitus in general has any such important significance, it has seemed to the writer that it should be possible to demonstrate definite correlations between the body build and the fundamental physiological characters which are concerned in disease. The present study was therefore undertaken, based upon the records of the University Health service for 1,633 young men entering the University of Minnesota during the year 1924-25. The available data include the age, stature, sitting height, body weight, chest girth, chest expansion, vital capacity, pulse rate, blood pressure and Schneider's cardiovascular rating. The methods used were in general those outlined in Pearl's "Medical Biometry and Statistics." The averages for the present group, together with the coefficients of variation, are shown in Table 1. The statistical details of this study and the discussion of the literature will be published elsewhere. Some of the more general conclusions are presented here.

The student group averaged about 20 years of age, 68.7 inches in height, and 141.4 pounds in weight. To measure the body build, the weight : height^2 index was used, the weight in pounds being divided by the square of the stature in inches; and the quotient being multiplied by 1,000 to form a convenient integer. The average index of build for the student group is about 30, which indicates a rather slender habitus. In general, the evidence from the frequency distribution of cases indicates that in the present group there is only a single true type of body build, with gradually decreasing frequency from the medium build toward the slender extreme on the one side and the stout on the other. There are no distinct groups of individuals of "hypersthenic," "sthenic," "hyposthenic" or "asthenic" types.

Since the stature remains fairly constant according to age in the present group, while the body weight appears progressively greater with age, it follows that the body build is positively correlated with age. That is, the older individuals tend to have a higher index of body build. The same is true for the (quiet) chest girth, as might be expected. The chest expansion, on

TABLE I

Average Data for 1,633 Male Students Entering the University of Minnesota During the Year 1924-25.

	Mean, and probable error	Coefficient of variation
Age	20.078 ± .046 yrs.	13.71%
Stature	68.684 ± .042 in.	3.66%
Sitting height	35.012 ± .022 in.	3.78%
Body weight	141.44 ± .29 lbs.	12.27%
Weight : height^2 index of build	29.962 ± .054	10.66%
Chest circumference	34.857 ± .035 in.	5.99%
Chest expansion	2.904 ± .014 in.	28.75%
Vital capacity	4383 ± 11 c.c.	14.54%
Pulse rate	80.177 ± .204	15.11%
Systolic blood pressure	124.28 ± .21 mm. Hg.	9.88%
Cardiovascular rating	9.995 ± .072	41.47%

the other hand, shows no definite correlation with body build. Slimness or stoutness, as such, does not seem to affect appreciably the amount of chest expansion (as measured with the tape line at nipple level).

The correlation between chest expansion and vital capacity was also studied. The coefficient of correlation between these two characters is +.351 ±.015. This is only a very moderate degree of correlation (perfect correlation being 1.00). The relationship between chest expansion and vital capacity is much less close than that, for example, between stature and body weight, whose coefficient of correlation in the present series is +.50.

The correlation between chest expansion and vital capacity is a matter of some practical importance. The chest expansion (difference in chest girth between extreme expiration and extreme inspiration) is still used by the great majority of the medical profession as a measure of the efficiency of the respiratory mechanism. It is the method prescribed in examinations for life insurance, admission to the army and navy, etc. Although various authors have criticised the use of chest expansion as a respiratory test, the present study is apparently the first statistical demonstration of its unreliability by direct comparison with the values for vital capacity obtained by the Sanborn spirometer. The chief reason why chest expansion forms so poor an index to vital capacity is because it neglects the diaphragmatic factor in the mechanism of respiration.

Vital capacity also has a positive correlation with body build, although the degree is even somewhat less than that between vital capacity and chest expansion. That is, stouter individuals tend to have a higher vital capacity, up to a certain point. As obesity is approached, however, the relationship is reversed, giving a negative correlation. This is probably because the accumulated masses of excess fat interfere with the respiratory mechanism, as was recognized long ago by John Hutchinson.

The systolic blood pressure in the present group shows a very slight positive correlation with the body build, so slight that it is of very doubtful significance. The results of this study therefore lend very little support to the doctrine that stouter individuals tend to have a higher blood pressure, and slender individuals a lower blood pressure.

The pulse rate shows a low, but somewhat more definite, negative correlation with body build. That is to say, in the present group the stouter individuals tend to have a somewhat slower pulse rate. Possibly this may be on account of variations in thyroid function, but no basal metabolism tests were available. Another interesting result of the pulse rate tests was the indication of three distinct groups or types, with maximum frequencies around 71, 79 and 95. These are apparently not merely accidental variations in frequency distribution, but their significance is uncertain.

Schneider's cardiovascular test* is comparatively new. It is supposed to be a measure of cardiovascular efficiency and resistance to fatigue, but its value is apparently still uncertain. From the present study, certain points of interest are evident. In the first place, the cardiovascular rating is extremely variable. Its coefficient of variability (41.47 per cent), as shown in table 1, is far greater than that for chest expansion (28.75), which in turn is much greater than that for pulse rate (15.11), vital capacity (14.54), or systolic blood pressure (9.88).

Schneider states that: "It is suggested that a score of nine or less gives reason for an overhaul of the patient by a clinician." If this is correct, it would mean that nearly half of the students at the University of Minnesota are in a bad physical condition, as nearly half of them have a rating of nine or less. Since the student body is actually a fairly healthy group, it is apparent that the limit of normality for Schneider's cardiovascular test must be considerably below nine.

Between body build and cardiovascular rating in the present series there is a rather low but significant positive correlation. That is, a stouter body build tends to accompany a higher cardiovascular rating.

The relations between body build and physiological functions as found in the present group may be summarized as follows. As to the respiratory mechanism, there appears no appreciable correlation between body build and chest expansion; but there is a definite, though rather small, correlation between body build and

*Jour. Am. Med. Assn., 1920, 74, 1507.

vital capacity. As to cardiovascular functions, the present data indicate a slight negative correlation between body build and pulse rate, a doubtful correlation between body and systolic blood pressure and a rather small positive correlation between body build and Schneider's cardiovascular rating. On the whole, the comparatively low degrees of correlation found would seem to indicate that the respiratory and cardiovascular functions are dependent chiefly upon factors not directly associated with the general bodily habitus.

DIABETIC FOODS

A recent food inspection decision of the U. S. Department of Agriculture revokes the official definition of so-called diabetic foods, thus automatically placing such preparations in the class of drugs. The government holds that references to any disease condition in the labeling of such articles implies to the public that they are efficacious treatments, and it therefore asks manufacturers and distributors to omit any such references from their trade packages. An investigation showed that "diabetic foods" were being held out to sufferers from diabetes as treatments for their condition rather than as mere diabetic aids in the management of the disease. The action taken is a gratifying official support of the efforts of the Council on Pharmacy and Chemistry to convince manufacturers that therapeutic recommendations should not have a place on a trade package. However, the Council has taken a a liberal attitude and does not object to the naming of diseases on trade packages of medicinal foods, or to a name implying the use of the product in diabetes, provided the advertising makes it clear that the product is not offered as a cure or even as a remedy for the disease. The greater stringency of the attitude of the government arises, no doubt, from the fact that it is acting on the basis of a law, the letter of which refers only to the trade package and label. (Jour. A. M. A., June 11, 1927, p. 1895.)

THE ASSIMILATION OF IRON

Investigations have been published, which the investigators believe to indicate that vitamin E is a substance specifically related to iron assimilation in a manner comparable to the relation of vitamin D to phosphorus and calcium metabolism. On this basis the use of ferric citrate and a fat having the properties of wheat germ oil—a potent source of vitamin E—is suggested as a logical basis for the treatment of secondary anemias. Since liver is rich in iron and in vitamin E this may be an explanation for the reported value of liver in the treatment of pernicious anemia. (Jour. A. M. A. April 23, 1927, p. 1323.)

THE VALUE OF BRONCHOSCOPY IN DIAGNOSIS AND TREATMENT OF PULMONARY DISEASE*

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Rochester, Minnesota

Bronchoscopy has developed in recent years from a procedure used almost exclusively for the removal of foreign bodies in the air passages to one of the most valuable aids in the diagnosis of obscure pulmonary disease. Its introduction into the field of pulmonary diagnosis was not accomplished without considerable difficulty and opposition. Until recently it was regarded as a procedure to be avoided and discouraged, and without value. Through the untiring efforts of the earlier bronchoscopists this opposition was gradually overcome, so that within the comparatively short period of six years the attitude of the medical profession toward bronchoscopy has undergone a marked change. The interest of the medical profession in bronchoscopy is further manifested by the increasing number of physicians attending the bronchoscopic clinics as well as their increasing knowledge of the procedure and the problems involved. It is surprising how the attitude of the patient has likewise changed. A few years ago it required considerable eloquence to secure a patient's consent to bronchoscopy, whereas within the last few years this has not been so necessary. Patients have come to us complaining that their condition had not received proper consideration because bronchoscopy had not been performed.

Rather than enter into a theoretic discussion of the value of bronchoscopy in the diagnosis and treatment of pulmonary disease I shall discuss the experience at the Mayo Clinic during the last year. During this period 165 patients were examined with the bronchoscope, some of them more than once. All such examinations were performed by Vinson or myself. Bronchoscopy was performed only after a thorough examination from the medical standpoint by all the ordinary methods available and only when it

*From the Division of Medicine, Mayo Clinic, Rochester, Minnesota. Read before the Lymanhurst Hospital Staff, Minneapolis, Minnesota, June 28, 1927.

might give some added or necessary information.

It is not necessary to call attention to the value of bronchoscopy in the localization and removal of foreign bodies known to be in the air passages. It is a good rule to remember that the sooner they are removed after inhalation, the easier the task. However, it is rare for a foreign body to constitute such an emergency that it should not be carefully studied before removal is attempted. The possibility of foreign body should be kept in mind in all cases of pulmonary suppuration or infiltration of indeterminate origin. It is also well to remember that a roentgenogram negative for foreign body does not necessarily rule out its presence. While this is a rather uncommon finding, when it is encountered the results obtained are so striking that it always deserves consideration. Bronchiectasis or pulmonary abscess of apparently severe nature due to a foreign body generally disappears as if by magic with removal of the foreign body. During the last year several such cases have come under our observation (Fig. 1).

It is important to differentiate calcareous deposits, frequently found in cases of old pulmonary suppuration, from inhaled foreign bodies. The removal of calcareous deposits does not always give the same striking results as the removal of inhaled foreign bodies, although it is often of considerable benefit. Calcareous deposits sometimes occur along with foreign bodies, and must be removed to obtain the maximal result. The deposits themselves seldom cast a shadow in the roentgenogram. In one case the inhalation of a toothpick had resulted in pulmonary abscess which did not disappear with removal of the foreign body; on bronchoscopy many calcareous deposits were removed and all pulmonary symptoms completely disappeared (Fig. 2).

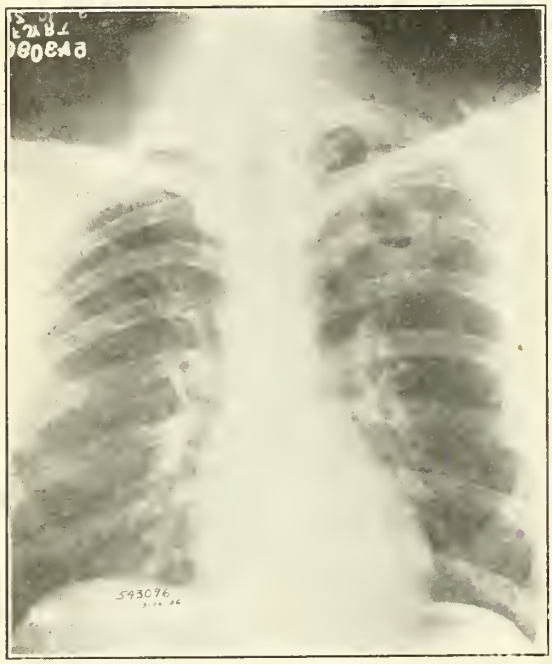

Fig. 1. Abscess of left upper lobe before bronchoscopy.

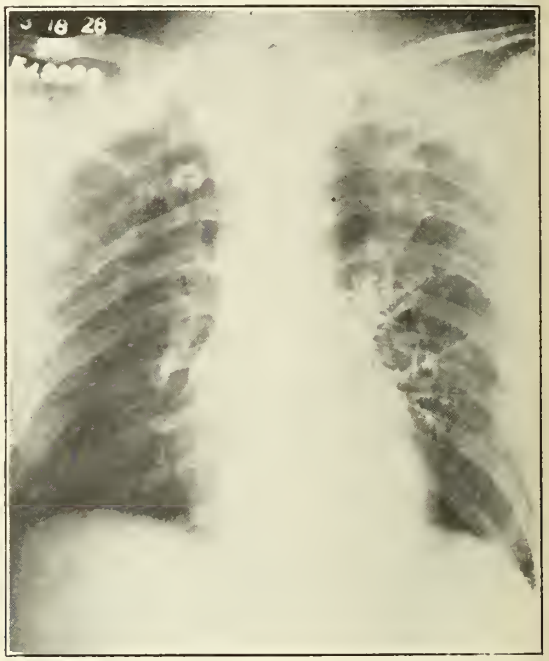

Fig. 2. Same case as in Figure 1, three weeks after aspiration.

While the diagnosis of bronchiectasis may be relatively simple, at times it may be extremely difficult. Hemoptysis without definite indications of tuberculosis should always make one suspect bronchiectasis. Vinson recently learned that hemoptysis was present in 49 per cent of the cases of bronchiectasis as compared to 29 per cent of tuberculosis and 18 per cent of mitral stenosis, in a series of 300 cases. Bronchoscopy is indicated in bronchiectasis when doubt exists as to a positive diagnosis, especially when there is a history of hemoptysis, as a long course of treatment in a tuberculosis sanatorium may be thus avoided. In cases of hemoptysis it is often

of paramount importance to know definitely which lung is involved and where the bleeding originates, as occasionally bronchiectasis may result in such severe hemorrhage that artificial collapse of the lung must be considered. Vinson and I do not hesitate to use the bronchoscope during a period of hemorrhage when this information is necessary, as we have never noted ill effects.

The localization of bronchiectasis is also frequently highly important, if surgical and other therapeutic measures are to be instituted. Unfortunately its localization is notoriously unreliable by the ordinary diagnostic measures. Even the roentgen ray is not always reliable. During the last year sixty-six patients with bronchiectasis were examined bronchoscopically at the Clinic and the condition found to be bilateral in many instances after it had been reported unilateral on roentgenologic examination. It was also found on the side opposite to that reported on roentgen-ray examination. If the condition is bilateral, surgery is necessarily contraindicated. Bronchoscopically, the diagnosis of bronchiectasis is made from the presence of pus, the dilatation of the bronchus, the decreased elasticity of the bronchial wall, and the congestion of the bronchial mucous membrane. At times a narrow ribbon of blood will lead down the bronchus to the involved area.

When any doubt exists as to the etiology of the bronchiectasis, bronchoscopy should be performed, as occasionally a foreign body or strictures causing insufficient drainage may be located. Simple drainage and aspiration in such cases may prove of considerable value, but unfortunately in the majority of instances these procedures must be constantly repeated to prevent the return of symptoms.

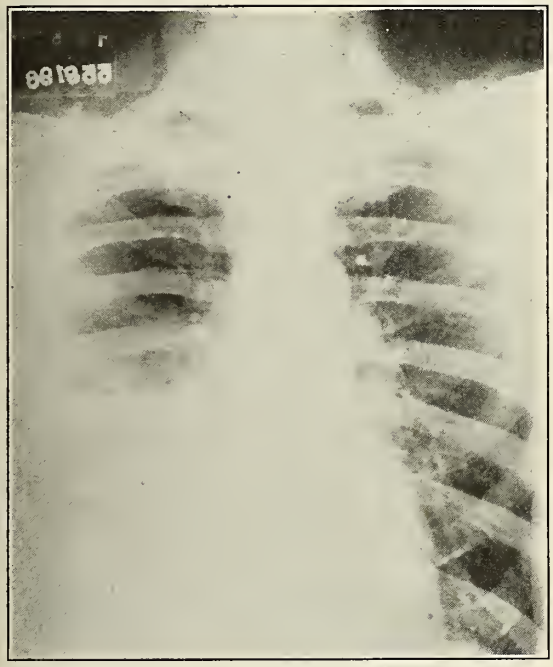

Fig. 3. Pulmonary abscess on admission of patient.

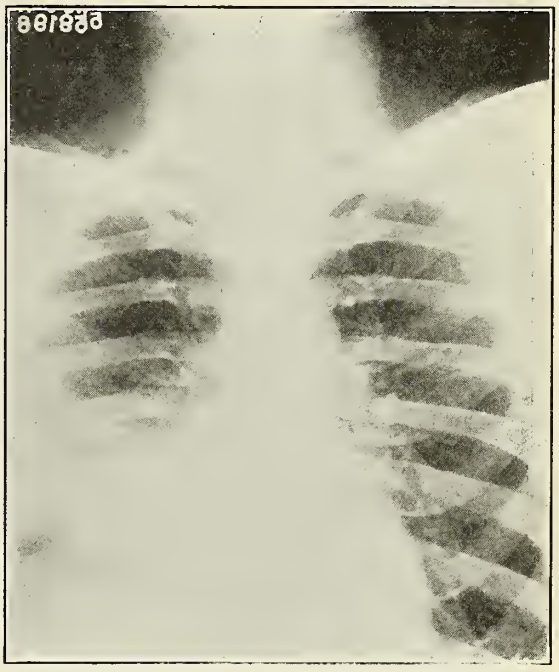

Fig. 4. Same case as in Figure 3, one week after bronchoscopic drainage.

We have had several patients with bronchiectasis and an associated debilitating disease who developed dyspnea and cyanosis from the accumulation of the thick tenacious secretion and were too weak to expectorate and were practically drowning in their own pus (Fig. 3). Rapid improvement followed the aspiration of the pus and the increased aëration of the lung.

Pulmonary abscess has always been one of the most difficult pulmonary diseases to diagnose and treat. It has been estimated that 50 per cent of untreated cases of pulmonary abscess terminate fatally. It is fortunate, therefore, that it is in this condition that bronchoscopy has been most effective. At first bronchoscopy was employed in these cases simply as a possible aid in the localization of the abscess preparatory to

surgery. It was a great satisfaction to note in some cases marked improvement in symptoms with an accompanying change in the roentgenogram. We soon were able to send several patients home completely cured, simply through bronchoscopic drainage. At first it was thought that such results would only be obtained when the abscess was extended about the hilus. To our surprise this was soon disproved, as we have since obtained some of our most striking results in cases in which the abscess was situated near the periphery. It was further believed that benefit could be hoped for only in cases of abscess of short duration, but this again has been disproved in our experience, although as a rule the shorter the duration of the abscess, the better the result from bronchoscopic drainage. Figure 4 shows the result of bronchoscopy in the case of an abscess of the upper lobe a week after the first treatment with disappearance of all symptoms. At the time of bronchoscopy the patient had temperature of 102° and a leukocyte count of 20,000. Figure 5 shows the result obtained in a case of abscess of the lobe one week after bronchoscopy. Last year ten such cases were treated, eight of which were definitely benefited. I believe that with more study we shall find that it will be possible to penetrate into the abscess cavity through normal lung tissue. Cases of pneumonitis, of course, will not show the same remarkable results as cases of abscess.

In cases of unexplained pyrexia and increased leukocytosis it is well to keep in mind the possibility of a small lung abscess or bronchiectasis with plugging. Recently I examined two such patients with the bronchoscope; both had a slight non-productive cough with a negative physical and roentgen-ray examination. In the first case an abscess was found in the left lower lobe behind the heart with a stenotic bronchus. About 3 or 4 ounces of pus was obtained and all symptoms disappeared (Fig. 6). In the second case an area of bronchiectasis was located as shown by roentgen ray; there was also a stenotic bronchus causing insufficient drainage. Pus was aspirated and the stricture dilated with relief of symptoms.

In our opinion one of the most reasonable indications for bronchoscopy in practically all pulmonary diseases of unknown origin in preference to indirect methods is the ability to see minute lesions and tumors. The roentgenograms in the majority of these cases are generally negative. There is no other method that I know about at the present time that will enable one to detect these lesions. Two such cases have come

Fig. 5. Massive collapse of lung before aspiration.

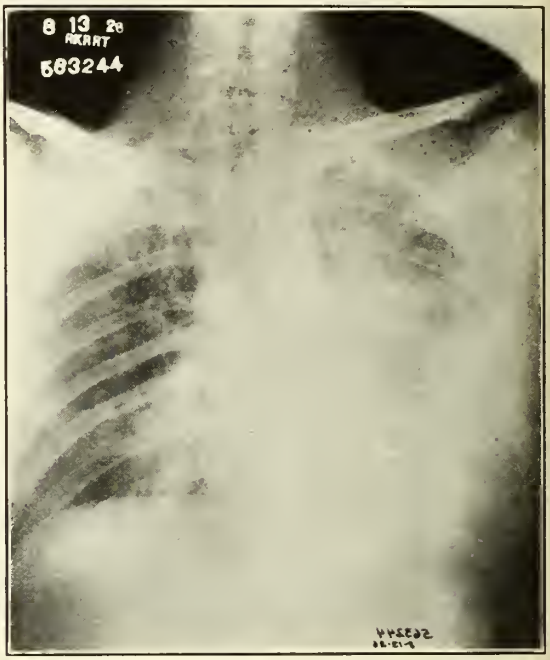

Fig. 6. Same case as in Figure 5, ten minutes after bronchoscopic drainage.

under our observation recently, one of granuloma of the bronchus and one of fibroma. Extensive treatment for every conceivable condition has been given in both cases.

A condition which is included under this group and which is proving of the greatest interest at present is that of carcinoma of the lung. During the last year we found eighteen such cases and made microscopic diagnosis of carcinoma in eleven and of lymphosarcoma in one. In some of these cases the roentgenogram along with the clinical history made us suspect such a condition. However, in many the roentgen ray was indeterminate and in one case negative. It is obvious that, without the assistance of bronchoscopy, the diagnosis in most instances would have been missed. As carcinoma of the lungs is still under investigation I am deferring a more comprehensive review of this subject until later. However, suffice it to say that a history of hemoptysis with sudden loss in weight should suggest pulmonary carcinoma.

Bronchoscopy is of great value in massive collapse of the lung. It was used in one such case during the last year. The patient had all the characteristics of massive collapse. During the night he became very cyanotic and dyspneic and appeared to be dying. About a pint of fluid was aspirated from the lung with the bronchoscope. During the procedure the heart returned to its normal position and the patient began to breathe easier. He then recovered rapidly and all his symptoms completely subsided.

A negative bronchoscopic examination of the bronchus may also be of considerable importance from a psychologic viewpoint. Furthermore, a negative examination may cause a more intensive examination elsewhere with the possible localization of the trouble outside the respiratory system. I have secured considerable benefit in an occasional case of bronchitis from the simple passage of a bronchoscope. About a year ago I used the bronchoscope for a man who had a chronic cough with expectoration of blood of six months' duration. Bronchoscopy revealed only congestion and inflammation of the mucous membrane. However, within a week all the symptoms had disappeared, and within a year he had regained the sixty pounds he had lost the six months previously.

SUMMARY

Experience teaches that bronchoscopy is desirable in the diagnosis and treatment of all pulmonary lesions of an indeterminate nature. It seems advisable to use the bronchoscope only after a complete clinical examination and before any foreign substance is introduced into the lung, as direct examination is of the greatest possible value, not only in disclosing the actual conditions at first hand but also and especially in discovering bronchial tumors and plugged bronchi which cannot possibly be as well portrayed by means of shadows.

LENS ANTIGEN

In 1924 the H. K. Mulford Company requested consideration of "Lens Extract," by the Council on Pharmacy and Chemistry, presenting as evidence for the value of the preparation the reports by A. E. Davis. The Mulford Company was informed that the evidence which it had submitted had been considered by the Council; that the referee to whom the product was assigned had consulted with a number of ophthalmologists, all of whom had agreed that the evidence for its usefulness was not acceptable, and that the Council had postponed the consideration of Lens Extract until more evidence becomes available to demonstrate its therapeutic value. Since then Dr. Davis has published two further articles. The Mulford Company has, however, not requested further consideration of its "Lens Extract," and the Council has taken no further action regarding it. (Jour. A. M. A., May 28, 1927, p. 1749.)

PREVENTION OF SCARLET FEVER

The ideal procedure in the case of a child exposed to scarlet fever is to make a skin test to determine whether the child is susceptible or immune to scarlet fever and at the same time make nose and throat cultures to learn whether the child is infected with hemolytic streptococci. If the skin test is entirely negative, further preventive measures are not indicated unless the cultures show the presence of hemolytic streptococci, in which case the child should be kept away from other susceptible children. In case the skin test is positive, the next step depends on the results of the nose and throat cultures. If these are negative and further exposure can be avoided, active immunization with toxin should be begun at once. If the skin test and the nose and throat cultures are positive, the administration of a prophylactic dose of scarlet fever antitoxin is justified. (Jour. A. M. A., May 14, 1927, p. 1587.)

ACUTE SUPPURATIVE APPENDICITIS: FACTORS IN MORTALITY*

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It would seem that a most humble apology is in order for bringing this subject to the attention of the profession. The profession and laity alike seem to have been lulled by the optimistic reports from various sources into the belief that appendicitis does not amount to much any more. We feel that the subject is not beneath our notice.

Our attention was drawn to the subject by the knowledge that in Minneapolis, a city of 425,000 people with a total of 4,932 deaths, appendicitis during 1925 contributed to the death of 89 persons, a death rate of 20 per 100,000. The number is not large, it is true, but nevertheless nearly 2 per cent of the deaths in Minneapolis are due directly or indirectly to appendicitis.

About a year ago Willis[1] called attention to the mortality from surgical conditions as recorded in the census office. He found that the mortality from hernia had dropped off 18 per cent from 1901 to 1905; that kidney surgery mortality had decreased 11 per cent during the period from 1905 to 1921; and pelvic surgery mortality had decreased 26 per cent during the same period. Gallbladder surgery increased in mortality from 1901 to 1922 some 72 per cent, appendicitis 31 per cent, and thyroid surgery mortality increased 250 per cent in the same period of time. On the basis of the 1922 mortality there are some 16,000 deaths from appendicitis each year in the United States. Surely a subject concerning the lives of some 16,000 people each year should hold our interest, and, though reduced to 89 for our own community each year, it is still worthy of our serious thought and consideration.

The mortality statistics with individual surgeons vary within certain limits, and are influenced not only by various personal factors, but by the class of patients treated, hospital facilities, and other local factors. No matter what figures are chosen for discussion there is room for improvement.

It seems that appendicitis is a disease of civilization, and as long as we are civilized we must expect to have the disease prevalent. Its incidence is remarkably low in the older parts of the world, and practically no cases are encountered among the hill tribes of India (McCarrison, in nine years' practice). Sex seems to play but little part in the incidence, yet most surgeons encounter the disease more often among males. The figures for prevalence according to age vary with the experience of the surgeon, yet no age group is immune to attacks of appendicitis. It is most common among the young adults and the middle aged group. Some authors have tried to show a family tendency, yet it would seem that the diet of the family should be considered as well as the family history. Trauma plays a definite rôle in the initiation of the disease. The trauma may be from within as well as from without. Small sharp articles may injure the mucosa and allow the entrance of bacteria in sufficient quantities to start an acute inflammatory process. The influence of fecoliths cannot be overlooked. Most concretions consist of about 50 per cent by weight of coprosterol and cholesterol, 25 per cent inorganic salts (calcium phosphate), and about 20 per cent cellulose. Appendicitis may be secondary to adjacent disease. Intestinal parasites may enter the appendix and help to cause an attack. Diet seems to be an important factor in explaining the incidence among Roumanian city dwellers of 1 in 221 cases as compared to the peasant rate of 1 in 22,000 cases. The diet of the peasant consists of vegetables chiefly, while the city people are large meat eaters. Likewise among the vegetarian tribes in Arabia, India and Japan, very few appendicitis cases are encountered. Short,[2] of England, has been the chief exponent of the cellulose idea in relation to appendicitis. He calls attention to the geographical distribution of the disease and to the fact that the appearance of appendicitis in England coincided with the large importation of highly protein foods. The incidence is low in institutions where the diet is coarse and appendicitis appears among the animals in captivity deprived of cellulose-containing food. Experimentally, Short showed that the cellulose mechanically acted to prevent the development of inflammations about the appendix. Bacteria encountered in the appendix are named in the order of prevalence: colon bacilli,

*Read before the Minneapolis Surgical Society, April 7, 1927.

staphylococci, streptococci, pneumococci, tubercle bacilli, actinomycosis.

ANATOMY

Paul Reclus states: "The veriform appendix is the diverticulum of a diverticulum; the cecum of a cecum." It is the undeveloped part of the cecum corresponding to the long terminal portion of the latter found in the lower animals. Its size and position are variable. The average length is 3.9 inches. It has its own mesentery, which when too short will cause a curling of the appendix on itself. The lumen opens about one inch below the ileo-cecal valve. The appendicular artery, a branch of the posterior ileocecal, runs behind the ileocecal angle, across the ileum and reaches the appendix by way of the mesentery, giving off branches up to the tip. The veins accompany the arteries. It is thus seen that the blood supply is rather precarious and is readily liable to interruption. The lymphatics accompanying the blood vessels empty into the rather constant lymph node at the ileocecal angle. The appendix has an abundant nerve supply from the superior mesenteric plexus and the sympathetic system. Histologically, the appendix is made of a serous covering, continuous with the peritoneum; the muscular layer of longitudinal and circular fibers which enter a network at the base; a variable layer of submucosa; and the mucosa, which contains the lymphoid tissue, glands, etc. There is no lymphoid tissue at birth, but at 32 weeks the appendix has the appearance of an actively functioning gland. A gradual disappearance of lymphoid tissue is noted about middle life. In this respect it somewhat resembles tonsillar tissue. The appendix is most often located under McBurney's or Munro's point in the right lower abdominal quadrant. There are two locations near the appendix that have a relation to its disease. These are the ileocecal or ileoappendicular and the subcecal fossa.

PHYSIOLOGY

Little can be said concerning the physiology of the appendix. Dried extracts[3] are capable of initiating an evacuation of the colon without griping. The appendix secretes an acid mucus and is capable of peristalsis.

PATHOLOGY

The pathology of the appendix has been worked out largely by the American profession. Outstanding names are those of Parker (1867), Fitz (1886), Bull (1873), McBurney (1889), Murphy (1889), Deaver, etc. Early names for appendicitis were typhlitis and perityphlitis.

In acute inflamamtion there are several stages:

1. Acute catarrhal. In this condition the mucosa alone is involved.

2. Diffuse. Because of the natural tendency to penetration, the catarrhal process often extends to the submucosa, gives rise to petechial hemorrhages and the process often extends to the serosa. Resolution may take place at any time if the process is arrested. The process, however, often extends and the appendix then becomes enlarged, thickened, elongated, dark or bright red in color, with a purulent exudate on the surface. An abscess may develop at the site of the petechial hemorrhage. The mucosa, swollen and congested, may erode even to penetration of the peritoneal covering. Should a perforation occur an abscess forms. Adhesions usually form and localize the abscess.

3. Gangrene. This is but the further development of the acute diffuse variety, putrefaction being a result of interruption of the blood supply. Other factors in the production of gangrene are: (a) ischemia due to pressure of pus under the relatively inelastic wall of the appendix; (b) increased virulence of the organisms causing development of violent inflammation; (c) the liberation and absorption of toxins under tension, causing pressure and toxic necrosis of the surrounding tissue.

In streptococcic inflammations there is often rapid extension of the process from mucosa to peritoneum and a general peritonitis may be present without much apparent inflammation of the appendix. The symptoms due to the appendix may thus be masked by those of the supervening peritonitis.

In the severe infections the mesoappendix and the mesenteric fat are often involved. Perforation of the appendix may occur at any time, may be pin-point in size or large, may occur as a result of pressure necrosis or erosion from ulceration of the mucosa.

Wilkie[4] described two acute processes in the appendix: the acute inflammation with rise of

pulse and temperature from the onset; and the acute obstruction with vomiting, colic and tenderness but without fever or tachycardia at the onset. He believed the nature of the fecal material in the appendix influenced the clinical picture in acute obstruction. High protein feces produced rapid gangrene while high cellulose feces produced less rapid changes.

Irwin[5] found, as causes of acute obstruction, concretions in fifty and strictures in six out of eighty-seven cases.

SYMPTOMS

The classical symptoms are so well known that they need little description. It should be emphasized that the large majority of cases present these symptoms in a certain sequence; and also that an occasional case will develop atypically. The symptoms according to Murphy are:

1. Pain, sudden, severe, colicky, often located first in the epigastrium, becoming most intense within four hours. The sudden cessation of pain means release of tension (ruptured appendix). Redwitz[6] considers pain a result of endarteritis present.

2. Nausea or vomiting, a reflex from the distention of the appendix. Secondary nausea and persistent vomiting are due to peri-appendicular involvement with peritoneal irritation.

3. Sensitiveness—at first diffuse, later localized over the appendix. Sudden increase after localization, associated with secondary nausea and persistent vomiting, indicates an involvement of the peritoneum.

4. Fever develops in from two to twenty-four hours, and remissions and exacerbations indicate infected areas, and call for immediate operation.

5. Leucocytosis. Moderate increases are noted; leucopenia is never found. The percentage of polymorphonuclears indicate the severity of the infection but not the extent of involvement. A sudden fall in leucocyte count is a bad prognostic sign.

Symptoms appearing out of this order should cause one to question the diagnosis and to investigate carefully. One should be very careful in examining the abdomen after the process has been present more than twenty-four hours, because the delicate adhesions are easily broken and allow spreading of the infection.

DIFFERENTIAL DIAGNOSIS

Pelvic trouble may simulate appendicitis, such as salpingitis, pyosalpinx, ruptured tubal pregnancy, twisted pedicle of a small ovarian cyst. The history and a careful bimanual examination will establish the cause of the illness, though here it should be noted that appendicitis and pelvic diseases are often associated.

Renal causes such as Dietl's crisis from movable kidney, renal or ureteral calculus, may confuse one. The character and location of the pain, the absence of fever, an examination of the urine, and the *x*-ray will clarify the picture.

Hepatic causes such as cholecystitis or lithiasis should be mentioned. The position of the tenderness, history or presence of jaundice and the radiation of the pain should aid in the diagnosis. In consideration of this point one should remember the sub-hepatic appendix and the low gallbladder—the one may be mistaken for the other.

Gastric and duodenal causes may be excluded by a history of pain in relation to food intake, the association of epigastric tenderness, hematemesis, bloody stools, and gastric dilatation.

Pulmonary disease, as pneumonia or pleurisy, may mimic the pain of appendicitis. Always carefully examine the chest. A very high leucocyte count (25,000) in the first twenty-four hours of illness is more indicative of pneumonia than appendicitis. A history of a chill will often be elicited in pneumonia. Dilatation of the alæ nasi will indicate pneumonia, and tenderness in the right side upon rectal examination will favor diagnosis of appendicitis.

MINNEAPOLIS EXPERIENCE

The deaths in the city of Minneapolis have been subjected to an analysis made possible by the whole-hearted co-operation of the Department of Health.

Deaths from:	1925	1926
Acute suppurative appendicitis	57	53
Acute appendicitis	16	20
Chronic appendicitis	16	19
Cases operated	85	85
Cases not operated	4	7

It will be seen that no age group is immune to acute appendicitis. One case is recorded of acute perforating appendicitis with abscess for-

nation in a child twenty-six days old, the whole rocess apparently occurring in twenty-four ours. Not all deaths from appendicitis are due o acute infections; from 15 to 20 per cent of ne deaths attributed to appendicitis occur in hronic cases.

Acute Suppurative and Acute Appendicitis Cases:

Age Groups Affected		
—9	11	7
10—19	12	11
20—29	19	11
30—39	10	12
40—49	9	12
50—59	9	9
60—69	1	7
70—79	2	4
80—89	1	—
Average Ages	30.3	34.7

COMPLICATIONS IN ALL CASES

	1925	1926
Surgical shock	4	1
Embolism—pulmonary, cerebral, mesenteric	6	10
Empyema, respiratory paralysis	2	—
Peritonitis, general or local	47	44
Ileus	15	19
Septicemia, pyemia	6	7
Pneumonia, bronchial, lobar	11	6
Kidney complications	1	2
Heart complications	6	6
Dilatation of stomach	4	1
Secondary abscess	3	1
Gangrene of ileum	1	1

Other complications mentioned in the records were: pancreatitis, encephalitis lethargica, Meckel's diverticulum, diabetes mellitus, and fecal fistula. There were records of forty-four cases of acute disease in which the duration of the illness was more than the days in attendance by the attending physician. The average duration of these forty-four cases without medical attention was 3.1 days. This would tend to indicate that in 60 per cent of the fatal acute cases there was a delay in calling medical attention. The duration of the disease was less than the days in attendance in twelve records, with an average of over four days under observation by the attending physician prior to development of the acute attack. This would indicate that in a certain percentage the error falls to the side of the physician in that he did not make an early diagnosis, or could not convince the patient, or for one reason or another failed to reach the site of trouble early.

HOSPITAL EXPERIENCE

An effort was made to get an idea of the experience of the local hospitals relative to the prevalence and mortality of acute appendicitis by questionnaire methods. Not all the local hospitals answered the queries. The information we obtained follows:

Total and acute and chronic appendicitis cases operated	1,656	
Total hospital deaths from acute and chronic cases	38	(2.3%)
Total acute suppurative appendicitis cases operated	375	
Total hospital deaths from acute suppurative cases	23	(6.1%)
Total cases appendicitis operated	1,851	
Acute suppurative cases operated	475	(about 25%)

It will be seen from this report that only 47 per cent of the deaths from appendicitis in Minneapolis are accounted for in the replies received. The other 53 per cent of the fatal cases must be divided among the institutions not replying. The reasons for the lack of the response we do not know. We have seen from our replies that the experience of the hospitals relative to the proportion of acute suppurative cases to the total cases varies widely. Some hospitals seem to have many, others mostly chronic and simple acute cases. But with some 47 per cent of the deaths accounted for, it would seem that about one in every four cases of appendicitis operated is because of an acute suppurative type of inflammation. Acute suppurative appendicitis is a serious disease and requires skillful surgical care and judgment. When so prevalent, it deserves our serious consideration, and should be regarded as major surgery.

PERSONAL EXPERIENCE

We have taken this opportunity to report a series of 130 cases in which the diagnosis of acute suppurative appendicitis was confirmed at

operation. The cases of acute catarrhal, and acute diffuse inflammation were excluded. This presentation is a chronological series of cases over a period of years in the practice of one of us (I. S.). No patient was denied an operation, however hopeless the prognosis seemed before operation. Only one patient refused operation. This case was not included in the series, although autopsy confirmed the diagnosis. Among the 130 operated cases there were twelve fatalities, giving a mortality of about 9 per cent for the whole series.

Series A—50 cases, 6 deaths, 12% mortality

Series B—80 cases, 6 deaths, 7.5% mortality

This division of the series corresponds to changes in operative technic, including abandonment of rubber tubing for drainage. Kahn,[7] in 1921, reported 195 similar cases with a mortality of about 5 per cent, and other authors have reported mortality figures more or less than those already given. It is when the inflammation gets beyond the appendix that high mortality figures are found.

The ages given on 126 records show a distribution as follows:

Age	No. Cases	Deaths	Mortality %
—9	11	1	9
10—19	25	3	12
20—29	34	2	6
30—39	23	3	13
40—49	22	1	4
50—59	5	0	—
60—69	3	0	—
70—79	2	1	50
80—89	1	1	100

The duration of the illness on the day of admission was as follows:

Duration (Days)	No. Cases	Deaths	Mortality %
1	14	0	0
2	38	5	13
3	16	3	19
4	15	3	20
5 to 10	15	0	—
10 days or over	11	1	9

The administration of large doses of cathartics is recorded in three of our fatal cases prior to admission. Early records with incomplete data prohibit drawing any conclusions.

The findings at operation were recorded as follows:

Localized peritonitis 111 cases, 2 deaths, mortality 1.7%.

Generalized peritonitis 19 cases, 10 deaths, mortality 52%.

The deaths in the cases with localized peritonitis were due to complications. In one, hypostatic pneumonia developed in an old lady of 87 following a secondary operation for resuturing of the wound; and in the other an ileus developed ten days after the primary operation. It is considered that without surgical intervention all of the nineteen cases with general peritonitis would have proved fatal. The presence of a general peritonitis at operation carries with it a definitely high mortality rate, and is a large factor in the mortality from appendicitis.

Abscess formation was recorded as present in 91 cases, with 12 deaths, a mortality of 13 per cent. It was absent in 39 instances, with no mortality. In the thirty-nine cases there was no definite abscess outside of the appendix, but all the appendices contained purulent material. It will be seen that the presence of an abscess is a decided factor in mortality.

Macroscopic perforation was noted in 75 cases, with 10 deaths, a mortality of 13 per cent. It was absent in 55 cases, with 2 deaths, a 3 per cent mortality. The two deaths were attributed to complications: one of hypostatic pneumonia after secondary operation for resuture; the other of exacerbation of tuberculosis about twenty days after operation. Here again it will be noted that the presence of perforation is a decided factor in mortality figures for the same reason as with abscess formation. The increased number of abscess cases over perforation cases may be explained by the formation of an abscess due to small pin point perforations that escape the attention at operation. Perforated suppurative appendicitis is generally recognized as associated with a mortality ranging from 20 to 50 per cent.

Ileus was noted in 52 cases, with 7 deaths, a mortality of 13 per cent. It was absent in 78 cases, with 5 deaths, a 6 per cent mortality. Ileus may be mechanical or paralytic. In this series all the cases of ileus were those of the mechanical variety. The average duration of the illness in the fatal cases with ileus prior to admission was four days. It will be seen that ileus

at operation carries with it additional mortality figures and the delay between onset and admission is considered to have an important relation to the serious nature of the condition seen at operation. Three of the seven fatal cases with ileus were almost moribund at operation, one had an additional gangrene of the bowel, and one was a chiropractor who delayed operation until ileus was very well established.

Gangrene was noted in 52 cases, with 10 deaths, a mortality of 13 per cent. Gangrene was absent in 78 instances, with 2 deaths, a 3.4 per cent mortality. One of the two deaths was due to an exacerbation of an old tuberculous infection; the other to a post-operative bronchopneumonia. That ten of the fatal cases had a well developed gangrene present indicates that this is an important factor in mortality.

But one of the twelve fatal cases had a fecolith recorded. The presence of a fecolith per se is not a factor in mortality.

The appendix was found to be retrocecal in 81 cases, among which were 5 deaths, with a mortality of 6.1 per cent; the appendix was in the pelvis in four cases, not one of which was fatal; the appendix was found in a hernial sac in one case which recovered; and was found to be more or less in normal locations in the remaining 44 cases, among which were 7 fatal cases. In this series the location of the appendix did not materially affect mortality figures.

The appendix was removed in all but 7 cases, in one of which the appendix had sloughed off. One was not removed, because of severe hemorrhage encountered from behind the cecum, and another was allowed to remain because of the poor condition of the patient on the table. Eleven of the fatal cases had the appendix removed at primary operation, one fatal case had not, which leaves the mortality figures about on a par. We believe in the removal of an infected appendix at primary operation if at all possible.

Ether was poured into the abdominal cavity in 70 cases, among which occurred 9 deaths. Ether was not used in the remaining 60 cases because the operation was performed prior to formation of an abscess, or for other reasons. We are not positive about the rôle of ether in presence of purulent exudate, but we believe that ether is an antiseptic and can safely be used in rather large quantities. We believe that ether closes the lymphatic channels in raw surfaces and prevents the rapid absorption of toxins. It forms a coagulum over the surfaces of the bowel, which causes the bowels to temporarily adhere, later absorbs and leaves the bowel surfaces free and in a natural condition. Ether also acts as a cardiac and respiratory stimulant.

OPERATIVE TREATMENT

The usual treatment is immediate surgery. We have not been converted to the Ochsner method, though there can be no question but that it is of considerable value in selected cases, especially in the absence of experience in the handling of severe surgical infections. We do not believe that the operation per se in the hands of an experienced surgeon increases the mortality rate of the disease. We further believe that all appendices, with but very few exceptions, should be removed at the primary operation. We endeavor to operate as soon as possible after the diagnosis is made.

The patient is prepared as for the usual laparotomy except that no enema is given until just before the operation. The usual hypodermic injection of morphine and atropine is given. The patient is shaved and not scrubbed on the table. Iodine and alcohol are used for skin disinfection.

The incision is a modified right rectus, more or less transverse, beginning at the outer border of the right rectus at about the level of the anterior superior spine of the ileum, cutting through the skin and superficial fascia and outer sheath of the rectus. This incision can be lengthened in either direction in a straight line for more room as the occasion may require, without affecting the strength of the abdominal wall. The rectus muscle is retracted inward and the inner sheath and peritoneum is opened in more or less of a straight line because when the wound is sutured the rectus covers the internal suture line, and the outer suture line does not lie over the inner suture line to any extent, consequently one factor favoring post-operative hernia is diminished. We believe that because of this incision our post-operative hernia incidence is low, even though drainage is free and prolonged.

After the peritoneum has been incised and the edges of the wound retracted, search is gently made for the appendix. When the appendix is found, moist gauze packs are used to wall off any abscess that may be present. If an abscess

is found, moist gauze sponges are used to cleanse the cavity. At times a suction pump may be used. By gentle manipulation the appendix is freed, even though it is retrocecal or retroperitoneal, and brought into the wound. The mesenetry is clamped and ligated, often in sections. The appendix is removed by doubly ligating the base, excising and cauterizing the stump with phenol and neutralizing with alcohol. The stump is now dropped back into the abdominal cavity. We do not feel that the operation is complete until adherent loops of the ileum are searched for, and if pus is present in the pelvis it is more than likely that a loop of the ileum will be found adherent to the bladder, uterus, rectum or pelvic wall. When such an adherent loop is found it is always freed and brought into the general abdominal cavity. If pus is present in the pelvis it is gently mopped out or removed by suction. We have no hesitancy in handling the bowel even though pus be present and we liberate the loops that are found adherent. But we do urge with emphasis the necessity of gentle handling of tissues. We frequently advise our associates regarding the absolute necessity of handling abdominal contents as gently as one would the tissues of the eye. It is possible to gently touch the cornea without injury, and the same holds true for the abdominal contents, but one cannot poke or pull on the tissues of either without causing damage. The rough handling of any and all tissues produces injury with erosion of the superficial layers, permitting the absorption of toxins and the formation of adhesions. We rarely use any instruments such as sponge holders, clamps, etc., on tissue not intended to be removed.

In cases where pus has been found and removed we are convinced that the use of ether poured into the abdominal cavity is of decided value, in amounts ranging from one-half to six ounces. We believe ether to be a definite antiseptic; that it produces a coagulum on the peritoneal and raw surfaces, and closes the lymphatic channels and thus prevents absorption of toxins, and that this coagulum will later be absorbed leaving the surface clean and free. Further, ether is a cardiac and respiratory stimulant. The toxicity of ether is negligible, especially as drainage is used in all ether cases.

Following the use of ether in all pus cases, Penrose cigarette drains are placed at one or several locations, such as behind the stump of the appendix, in the right iliac fossa, and in the pelvis. The drains are led out at the lower angle of the wound. We do not use stab wound drainage. With this procedure we have found no infection of the wounds after operation.

The peritoneum and fascia are sutured with No. 2 catgut, the skin with No. 1, and 2 or 3 silkworm gut sutures are placed in the skin and fascia and tied across small pieces of rubber tubing to avoid cutting into the skin.

The post-operative treatment is rather simple. We believe in the free use of fluids. In the absence of vomiting, water is permitted by mouth soon after operation. Hypodermoclysis is used frequently as soon as the patient returns from the operation. We are not stingy with morphine. It is used as may be required for pain. Fowler's position in bed is always used where pus has been found. Lavage is utilized when vomiting has continued for twenty-four hours. Foods, except liquids, are restricted for at least forty-eight hours after operation. The above routine may be varied in individual cases to suit the occasion.

We feel that considerable progress has been made in pus cases when the appendix has been removed. The removal of the appendix does not increase the mortality, even if considerable manipulation is necessary for the removal, when done by a surgeon experienced in handling such conditions. In the case of the occasional operator the mere drainage of the abscess is often the indicated operation. We have not found that our fatal cases were the result of the operation but occurred in spite of it. Our fatal cases were those with general peritonitis, or ileus, or patients who died as a result of complicating conditions of heart or lung, over which the surgeon had but little control.

POST-OPERATIVE COMPLICATIONS

Ileus after operation was recorded in 9 patients, 8 of whom died. Ileus was present at operation in these 8 fatal cases. We believe that drainage as well as general peritonitis is a factor in the development of post-operative ileus. One of the cases developed ileus thirty days after operation, was reoperated and recovered fully.

General peritonitis was present in nine of our patients after operation, eight of whom died.

These eight cases had a general peritonitis prior to operation, with the very grave prognosis of advanced cases. One of our cases developed a general peritonitis after operation and recovered. We believe in operative treatment of all general peritonitis cases. That general peritonitis was encountered at operation in 19 cases, only eight of which proved fatal, only confirms the opinion.

Six of our patients developed a secondary abscess, all of which were drained. All recovered but one who died from ileus. It is apparent that this complication is not serious if promptly recognized and treated.

Fecal fistula was encountered in but one case, and followed the use of three rubber tubes for drainage. This case healed spontaneously and recovered fully.

Post-operative hernia was noted on the records in 10 cases. One of these was intentional, because the appendiceal abscess from a perforated appendix was found in a scrotal hernia at primary operation. The appendix was removed, the abscess drained, and an uneventful recovery followed. Secondary operation was necessary for the cure of the hernia. Of the nine remaining cases that developed hernia, rubber tube drains were used in seven. In the two cases encountered after the use of cigarette drains, one was a case that required secondary operation for secondary abscess and prolonged drainage. It will be seen that rubber drainage is the greatest factor in the development of post-operative hernia.

Two of our fatal cases developed a bronchopneumonia, a serious complication.

FATAL CASES

1. (1915) B. P. N., aged 35, came from out of town, was ill for five or six days, and at operation general peritonitis and a perforated gangrenous appendix with abscess were found. The appendix was removed, ether was poured into the abdominal cavity and rubber tube drains inserted. After twenty-four days it was necessary to reoperate because of formation of a secondary abscess which resulted from the deficient drainage through the rubber tubes. Death was due to ileus.

2. (1918) Miss B. F., aged 15, was first seen on the tenth day of the illness, came from out of the city, was operated on the eleventh day of her illness, when general tuberculous peritonitis, retrocecal abscess and tubercles on the ileum were found. The appendix was not removed because of the patient's poor condition on the table, but the abscess was drained with rubber tubes. She lived for twenty days, but the late operation with the exacerbation of an old pulmonary tuberculosis prevented a recovery. Death was due as much to complicating tuberculosis as the appendiceal abscess.

3. (1919) Miss J. M., aged 4, was ill four days, came from out of the city, in an almost moribund condition, and was operated immediately. We found a gangrenous, perforated appendix with general peritonitis. The appendix was removed quickly, and rubber tubing drainage was instituted. She failed to rally and died the same day from general peritonitis. The operation was late, and the infection virulent.

4. (1919) A. J. P., aged 12, had been ill for two days, came from out of the city, and was operated the same day. We found a retrocecal, perforated, gangrenous appendix with retrocecal abscess and a generalized peritonitis present. The appendix was removed, ether poured into the abdominal cavity, and rubber tubing drainage was used. He lived for two days and succumbed to the combined ravages of a severe infection, general peritonitis and the development of an ileus.

5. (1919) S. T., aged 17, had been ill for four days, when first seen in consultation. At operation the same day, a perforated, retrocecal appendix and pelvic abscess with ileus in the pelvis was encountered. The peritonitis was generalized. The appendix was removed, ether was poured into the abdomen and rubber tubes inserted. Eleven days after operation an ileus developed in the pelvis and the patient died after the secondary operation for relief of the ileus. Perhaps the secondary operation for the secondary ileus was delayed too long, but we feel that the presence of the rubber tubing was a strong factor in this case.

6. (1919) H. A. was ill for several days, and at operation a perforated appendix with abscess and general peritonitis was encountered. The appendix was removed, ether poured into the cavity and rubber tubing used for drainage. Death occurred three days later, following development of bronchial pneumonia and ileus.

7. (1921) A. J. K., aged 26, took a strong cathartic, was seen on the second day of illness, operated upon that day, and we found general peritonitis, abscess, gangrene, and Lane's kink. The appendix was removed, ether used, cigarette drains inserted. An ileus developed on the fourth day with general peritonitis and death occurred on the next day after the second operation. Death was due in part to mitral heart disease with myocardial failure.

8. (1923) J. L., aged 42, was admitted on the second day of his illness, drove in from out of the city, and was operated upon that day. A general peritonitis, abscess ileus, gangrene with necrosis in many areas of the bowel, and thin pus were present at the operation. The appendix was removed, ether, cigarette drains used, the time consumed being seventy-five minutes with local and general anesthesia. His condition was poor while on the table. Improvement gradually con-

tinued after operation, with some evidence of gangrene of the bowel, and occasional hemorrhage into the bowel, but all went well until about the twenty-first day after operation, when he became toxic, his heart failed to respond to treatment and death intervened on the twenty-third day after operation—a heart death.

9. (1923) W. M. C., aged 30, was admitted on the fourth day of the disease, and operated upon the same day. At operation a generalized peritonitis, a perforated, retrocecal appendix with abscess, and ileus were present. The appendix was removed, ether used, and two cigarette drains were employed. At secondary operation sloughing of the ileum and general peritonitis were found. Death occurred on the fourteenth day after the primary operation. The condition was complicated by the presence of a goiter.

10. (1925) Mrs. K. M., aged 87, had a history of several attacks, was first seen and operated upon on the second day of her last illness. At operation a local peritonitis, abscess, and a gangrenous retrocecal appendix with thick exudate over the cecum were found. The appendix was removed under local anesthesia, a drain inserted, operation time fifty-five minutes. On the fifth day the wound opened and was resutured under gas anesthesia. Hypostatic pneumonia developed and death occurred on the fifth day after the primary operation.

11. (1925) F. A., aged 25, was admitted on the tenth day of his illness, gave a history of use of cathartics and was operated on the next day. It was found that the retrocecal appendix was gangrenous and had sloughed so that the base could not be found, that an abscess had formed and an ileus had developed with a general peritonitis. The appendix was removed, ether was used, and two cigarette drains. Ileus developed again on the third day, a secondary operation was performed, and death resulted from the general peritonitis on the fourth day after primary operation.

12. (1925) H. L., aged 71, was seen in consultation on the third day of illness, and operated that day. At operation a general peritonitis, abscess, ileus, thin pus, and a gangrenous appendix were found. The appendix was removed, ether used, cigarette drains employed, but death resulted from the general peritonitis and ileus on the second day after operation. Age was a factor in this case.

CONCLUSIONS

1. The mortality from appendicitis has increased during the past fifteen years. Familiarity has apparently bred contempt, but appendicitis still belongs to the sphere of major surgery.

2. Because of the incidence of acute suppurative appendicitis every tyro should not be encouraged to operate such serious surgical cases.

3. Surgical intervention should be instituted as soon as a diagnosis is made. The earlier the diagnosis and intervention the lower the mortality.

4. The removal of the appendix at the primary operation is the method of choice, especially in skilled hands.

5. The factors of age, sex, presence of fecolith, or location of the appendix, do not seem to contribute anything to the mortality rate from this disease.

6. The factors of delay (permitting extension of the process), the presence of gangrene, perforation, abscess, peritonitis, ileus, at operation are attended with definitely increased mortality rates.

7. The presence of or development after operation of complications such as ileus, general peritonitis, cardiac and pulmonary conditions is a factor in increased mortality.

8. The presence of, or development of, post-operative secondary abscess, fecal fistula, and hernia does not contribute to increased mortality figures.

9. A loop of bowel adherent in the pelvis should be searched for and gently liberated. This procedure will do much to lessen the incidence of post-operative ileus.

10. Ether has been found to be of value in the treatment of suppurative appendicitis, because of its antiseptic, coagulating, and stimulating properties.

11. The use of the Penrose cigarette drain is a step forward in drainage of the peritoneal cavity.

12. Fecal fistulæ have not been seen since the use of the Penrose drain.

13. The Minneapolis Surgical Society is urged to take the initiative in the direction of increased surgical efficiency in Minneapolis, and to encourage the coöperation of surgeons and hospitals in maintaining accurate and complete records so that studies in efficiency may be undertaken.

14. The Minneapolis Surgical Society is also urged to initiate the proper movements to the end that the public at large will from time to time be informed of the dangers in delay after onset of an acute appendicitis.

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DISCUSSION

Dr. H. B. Sweetser: I think no apology is necessary for the introduction of the subject of suppurative appendicitis for the reason, as Dr. Sivertsen shows, that there is a yearly average of 16,000 deaths, mostly in the productive age. This is a high mortality for the disease which we had thought we had under control. The reasons for this increased mortality are probably various, but I think delay in proper treatment is probably the most important cause. Possibly such delay may have an economic basis, for people worry much about the cost of sickness in these days of the high cost of living, and are very apt to think that pain in the abdomen may not amount to very much, and in very many cases will take a cathartic and will wait a day or two before they send for a doctor. This practice of taking cathartics in the presence of pain in the abdomen is, because of delay, one of the main factors in the increased mortality of suppurative appendicitis. Another factor causing delay is the practice of doctors giving morphine to relieve pain before a diagnosis is made or before consent is obtained from the patient to submit to any treatment that may be advantageous, especially operation. It is very difficult to be called to see a patient who is suffering from acute pain in the abdomen, and tell them we cannot give them anything to relieve this pain until we have decided just what is the matter, and, in case an operation seems necessary, until we have received the consent of the patient to such plan of treatment. Unfortunately the giving of a hypodermic of morphine may both mask the characteristic symptoms, making diagnosis difficult, and allay the apprehension of the patient and make him think he is not seriously ill. In this way many hours of valuable time may be lost. It is equally difficult to educate people against the taking of cathartics, and doctors against the giving of morphine before a diagnosis is made. Dr. Sivertsen's statistics show the important part that delay plays in the high mortality of acute suppurative appendicitis. His report shows that cases operated within the first 24 hours had no mortality; those operated the second day had a mortality of 13 per cent; those on the third day, 19 per cent; those on the fourth day, 20 per cent; those on the fifth day, 9 per cent; and cases operated on later than this had a still lower mortality. So we see very clearly that early diagnosis is of the greatest importance in the disease, but an early diagnosis is not always easy. In typical cases even a lay person can guess what is the matter, but in atypical cases diagnostic skill is very often necessary to arrive at the proper conclusion. Thus a doctor may see a patient who gives a history of having had a moderate amount of pain a few hours before, who, upon examination, has no increased temperature, a normal pulse rate, a normal or moderately increased leukocyte count, practically no tenderness, and who does not feel very sick. We all know that such cases, upon operation, show a gangrenous appendix, or one that has already ruptured. These are the patients who give us trouble, for we find that we may operate and find a normal appendix, whereas, if we delay, we may eventually have to deal with a very serious and possibly a fatal intra-abdominal lesion.

Dr. Sivertsen failed to mention a rather rare but very fatal complication, namely, secondary abscess of the liver. This is a very tragic complication, as it manifests itself generally about the time that the patient feels well and is ready to leave the hospital.

As regards technic:

1. I think it is very important to make an incision large enough to see all the pathology present without working in the dark. A large incision does not increase the risk of hernia, and it does increase the safety of operation.

2. I practically always make a right rectus vertical incision. I find this can be extended in either direction more easily than can a gridiron incision.

3. Where the appendix is not ruptured it may be removed as easily and as safely as an interval operation, and the abdomen closed without drainage.

As regards drainage:

1. In cases where the appendix is not ruptured, and there is no peritoneal exudate, or even if there is some exudate, if this is sterile, no drainage is necessary.

2. However, if there is any doubt about the matter, a cigaret drain, which may be removed in 24 hours, may be used, and thus relieve a surgeon's anxiety.

3. In acute cases I think it is unwise to tie the stump and then turn it in with a pursestring suture. This technic produces a small closed pocket. I had one fatality from acute sepsis, where the intra-abdominal finding was a few drops of pus in such a little closed pocket.

4. Where there is a large abscess the abdominal wound may be left widely open, and a large cofferdam drain of rubber tissue and gauze used. Of course, under no circumstances should the gauze be allowed to come in direct contact with the peritoneal surface.

5. I agree with Dr. Sivertsen as to the advantage of a cigaret drain over rubber tubing, although I do not think that the rubber tubing is as important as he does in the producing of fecal fistula. I think the fistula is mostly due to the primary pathology of the disease. In draining the Douglas cul-de-sac I practically always use a rubber tube, as the operating rooms generally do not provide cigaret drains long enough to reach the bottom of this cavity.

Sometimes in neglected cases an abscess may be so large that simple incision of the abscess without invading the general peritoneal cavity is a life-saving measure. Also, in very young children who do not stand prolonged operations, if the abscess can be felt from the rectum, drainage of this will be a determining factor as to the result.

Concerning moribund cases: Dr. Sivertsen advocates operation on all cases irrespective of the time when

seen. If the patient looks as if he were about to die, it may be unwise to subject him to operation. Of course most of these case will die, but occasionally one may be tided over to a point where he may be operated safely.

As regards the use of ether as a local application to sterilize the infected area, I also use this routinely in cases that have been anesthetized, but I wish to give a warning that ether produces great pain, as I have found from experience, and would advise that it would not be used when the patient is being operated under local anesthesia.

Concerning closure of the abdominal wound:

1. If there is a large amount of infection, it may not be wise to close the wound at all, as I mention above, but to pack it with gauze protected by rubber tissue. Hernia will probably result from this, but hernia is a secondary consideration in case of virulent suppurative appendicitis, when what we wish to do is to save the patient's life.

2. When the abdominal wound is closed, it is very important to avoid tight closure. There is always more or less secondary swelling, and tight closing may produce strangulation and necrosis of the aponeurosis and consequent swelling, long period of convalescence, and inevitable hernia.

In closing I want to congratulate Dr. Sivertsen and I am very glad he brought this subject before the Surgical Society and I hope that at least once a year we will have a paper of this type read.

Dr. S. R. Maxeiner: I had the pleasure of reading Dr. Sivertsen's paper and I agree that there is no apology necessary for bringing a topic like this before us. I think Dr. Severtsen has brought up a very important subject. Twenty per 100,000 of the people in Minneapolis die from appendicitis, directly or indirectly. I may be a bit old fashioned but I still use rubber tubing and insist on it for the perforated cases. I have used two tubes and I usually split the tube so that the drainage will come in at all points. The first tube goes into the pelvis and the second tube into the kidney region. It will catch up the drainage of pus that goes outside of the colon into the kidney region.

I think differential diagnosis in a typical case needs no further discussion. In the atypical case I have seen a number of the best men fail to make a diagnosis. I have also seen them open the upper abdomen and find a perforated appendix. The General Hospital gets a lot of these long neglected cases. One of the causes of a distended small bowel above the appendix is the fact that the appendix is lost under this loop of small bowel. Its action upon the bowel itself causes an acute distention of the bowel above it. In such cases a large rubber catheter should be inserted through the opening of the cut-off end of the appendix and through the ileocecal valve and an ileostomy performed. We do get a lot of gas out of the bowel with such a procedure.

I have been using ether largely. Only recently I had the privilege of seeing a case with one of our good men at St. Mary's in which I helped and our judgment was to take out the appendix. Operation was delayed in the hope that we might get him in a little better condition. About twelve hours later we operated. We tried to take the appendix out but the patient died. May he not have had one more chance in five hundred if we had not looked for the appendix and taken it out?

The incision which I prefer and which I always use is McBurney's incision if I am certain of my diagnosis. It puts you over the site of the pathology. I have repeatedly removed the appendix without getting into the peritoneal cavity. I do not even see any small bowel and I do not want to contaminate any small bowel unless I can help it. Handling of the tissues cannot be too much emphasized. I think perhaps that is one of the advantages in local anesthesia. The man who does them under ether may be very bunglesome and may cause a great deal of trouble. Local anesthesia teaches us, if nothing else, the respect for tissue. I drain all my cases with rubber tubes and I have had comparatively few fecal fistulas. Fecal fistulas occur in the cases in which, just as Dr. Sweetser says, you get thrombosis of the veins and have interfered with the blood supply of the cecum. You are very apt to get a necrotic spot in the cecum regardless of whether there is drainage or not.

To have a mortality of 20 per cent from chronic appendicitis is altogether too high. I am even more liberal than Dr. Sweetser in giving morphine in preoperative treatment.

Dr. R. C. Webb: Dr. Webb said that he felt that the society was to be congratulated in having the statistics of appendicitis in the city of Minneapolis presented in this manner by Dr. Sivertsen. He said that he fully appreciated the variability of surgical statistics in this treacherous disease but he felt that as statistics go Dr. Sivertson's report showing twelve deaths in one hundred and thirty cases was really very high. Dr. C. E. Farr reported 818 cases of acute appendicitis with a mortality of 4.15 per cent on Gibson's service at the New York Hospital. The Gibson drain was used in one hundred and sixty-two of these, that is, in approximately one out of five which were the most serious cases and in these the mortality was 12.3 per cent.

Dr. Webb showed a series of lantern slides illustrating the use of the Gibson method of drainage. He said that he felt that this drain not only lowered the mortality but that in discussing methods of drainage one should also reckon in terms of morbidity. It is practically impossible to get a patient out of the hospital in less than twenty days when this drain is required but the average stay is 22.4 days with the drain. He felt that when this type of case was drained by ordinary methods the hospital stay was nearer twice this time.

Dr. Webb said that he questioned the value of ether in the peritoneal cavity. He said that he had recently had an acutely inflamed appendix perforate at the time of operation and a previously clean field became seriously infected. The surgeon assisting wished to wash the wound with ether and this was done. There was

the usual evidence of infection present with no apparent influence from the ether. It is well known that ether causes serious discomfort to the abdominal contents if the anesthetic is local. He asked if anyone had any evidence of the value of ether in the peritoneal cavity other than that of local tradition.

Dr. Arthur F. Bratrud: The mortality in operations for acute appendicitis is too high. In a series of over 700 cases done at the Warren Hospital, we had a mortality of 2.5 per cent. After forty-eight hours the Ochsner treatment was followed, except in cases where the abscess pointed in a definite location. Drainage in the right lower quadrant was practiced when the abscess pointed in that location. Rectal drainage was performed when abscess pointed in the cul-de-sac. All cases received within 36 to 48 hours were operated upon.

No case should be interfered with surgically on the third, fourth or fifth day, as it is a recognized fact that in this period the mortality is high.

Drainage should be used where the serosa is dry and has gangrenous patches; for this no hard rubber tube should be used, as there is the danger of injury to the vessels and resultant thrombophlebitis. The question of whether soft rubber tissue, soft rubber tubes, Gibson or Mikulicz drains should be used, depends on the individual cases, and whether the bowels must he held out of the pelvis in order to prevent obstruction. No wounds should be sutured, but merely strapped by the method of MacLaren of St. Paul. This gives a clean wound, with no infection of fascia, subcutaneous tissue or skin. I believe this added infection in the abdominal wall in some cases where the wound has been sutured causes just sufficient added toxemia to cause death; for it is remarkable the amount of infection that the peritoneum will take care of. The cases with wound not sutured leave the hospital on an average of twenty-one days, with the wound fairly well healed. Should operation for hernia be required later, there is always good fascia and plenty of it to effect a good closure.

KEROSENE

Kerosene is a weak antiseptic and parasiticide and irritant to the skin. Therefore: It can be used for parasitic affections of the scalp. It is of some use for seborrheic dermatitis of the scalp and, if it has any effect in preventing the outfall of hair, it is presumably due to its irritating—stimulating—effect on the skin. But it does all these things in a crude, disagreeable way. All of them can be done more efficiently and much more accurately with drugs of definite composition. Its vogue as a hair tonic and hair restorer is largely due to that popular feeling, which has come down through the millenniums from our barbarous ancestors, that the efficiency of drugs is in proportion to their disagreeableness. (Jour. A. M. A., June 25, 1927, p. 2048.)

OBSERVATIONS ON PNEUMONIA BY A COUNTRY DOCTOR

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It is with considerable trepidation that this article is written on such a common and well understood subject as pneumonia, but after treating sixty-five cases of this condition in the last two winters, all in the home, I was prompted to set down some of the interesting features encountered. Thirty-seven in this series were treated while in practise in the northern part of the state, and the remaining twenty-eight cases were encountered in this community during the current fall and winter.

Pneumonia is a very common disease, especially in this climate, and comprises a large proportion of the conditions the general practitioner is called on to attend in his daily work. The occurrence of disease in this series showed a marked seasonal variation, being greatest in the winter and early spring, about 75 per cent occurring in January, February and March of the respective winters. Of this series the ages of the patients varied from three months to fifty years. About 50 per cent were in individuals under eight years of age.

Types.—Bronchopneumonia was present in sixty of the sixty-five cases, and only five cases could be classified as true lobar in type. Of the twenty-eight cases treated this winter, two were true lobar, one being in the upper, the other in the lower lobe of the right lung. True lobar pneumonia with the typical text-book picture, has in my experience rarely been seen.

Symptomatology.—The temperature in these cases varied from 100 to 104.5 degrees. In the majority, the relatives had their first premonition of some serious development and called the doctor because the patient was "feverish." Cough was a very common and constant symptom. usually preceded the attack, and was generally dry, harsh and unproductive when the patient was first seen. An increased respiratory rate with dyspnea was the symptom usually first noticed in babies and small children. I have found that dilation of the alæ nasi with each respiration is one of the most reliable signs of beginning pulmonary congestion. In many of the pa-

tients old enough to express themselves, pain in the chest on inspiration was a common complaint. This was often found in cases where as yet no demonstrable pathology was present in the chest. Pain was usually designated as being present in the lower part of the chest. About 30 per cent of the series was ushered in by a severe chill, and significantly these cases proved to be the most refractory to treatment. In some of the patients, the physician was not called until the relatives noticed the production of the characteristic, sticky, rusty prune-juice sputum. This was present in the lobar cases, but I also saw it in many of the bronchopneumonia type, where I could make out no definite lobular involvement.

Clinical findings in the bronchopneumonia patients varied, depending on the time I was called. In some cases resolution had begun to take place, and in others the process had just commenced. Findings at the onset, however, were all similar: a duller percussion note over the affected areas, a decrease in breath sounds, and in many cases in this stage crepitant râles could be elicited by cough. Later, sometimes on the visit on the following day and sometimes three to four days later, there were patchy areas of bronchial breathing and moist râles which increased with resolution of the process. One important sign, in all early cases of bronchopneumonia and lobar pneumonia, which has enabled me to diagnose an approaching pneumonia in the very early stages, is the auscultation of the whispered voice—pectoriloquy. This finding, in my experience, has always heralded the approach of a pneumonic condition. In the lobar types, the findings were similar throughout the same stages, with the exception that the inflammatory process could be definitely localized in a lobe or in one lung. Percussion here was very helpful, because the affected lung area could be easily mapped out by this method.

Treatment.—All patients in this series were cared for at home. In only ten instances was it possible to secure the services of an experienced nurse, and then only practical nurses were available. Usually the mother or some relative acted as nurse and attendant to the patient.

Undoubtedly everyone in general practice is familiar with some of the local applications frantic relatives will smear on the chest in the hope of affording relief. I have discovered many "old timers from Grandma's time," used to put on the patient's chest. In practically all of these cases, I would find the patient greased with some absurd mixture on my first visit, which I promptly dispensed with. The most common of these topical medications, used or recommended by solicitous relatives or helpful neighbors and friends, were goose grease, fried onion poultices, skunk oil, turpentine and lard, and camphorated oil. I never could conceive of the possibility of any local application being able to penetrate skin, fascia, muscle, bone, and pleura and reach the seat of infection in the lung. But all of the relatives would have great faith in topical application, and as I knew from experience they would rub something on the chest, whether I recommended it or not, I usually suggested camphorated oil, as being the least harmful, and incidentally the cleanest; and its odor served not only to give a sick room odor, but seemed to soothe the relatives as well.

A pneumonia jacket was insisted upon in all cases. An excellent jacket can be made from cotton and soft cheesecloth, with about a two inch thickness of cotton between a couple of thicknesses of cheesecloth, the jacket reaching from the neck to the waist. I used dry, never wet, pneumonia jackets on all these cases. I also advised warm bedclothing, flannel nightshirt or pajamas preferably, depending however, on the bedclothing the individual was in the habit of wearing.

Rest, I feel, is the most important item in the treatment of the pneumonic infections. At the onset the mother was told in very emphatic terms the necessity of absolute rest for the patient, the importance of keeping the patient quiet, not allowing him to sit up in bed, and the insistence absolutely on the use of a bed-pan. The attendants were then told of the necessity of forcing fluids, and the benefit to be gained by such a procedure. I usually asked them to see that the patient consumed a glass of fluid every hour. Water was, of course, the most important liquid, but in case the patient tired of water, he could substitute orangeade, lemonade, milk or cocoa. The diet was then carefully explained to the mother. One has to be specific and mention the articles of food that the patient can eat, because frequently injurious items are given to the sick

one. I have used a high carbohydrate diet with excellent results. It provides not only an easily assimilable food, but energy in the form of the absorbed sugar. The attendant was told to sprinkle liberal portions of sugar on all food served to the patient. The diet given to the older patients was Cream of Wheat, oatmeal, milk toast, orange juice, ice cream, junket, soups and gruels, and during convalescence eggnogs in addition. For babies, either breast-fed or artificially fed, diet was particularly stressed, because I have found that once nutrition is interfered with, a fatal termination almost always results. The care of the bowels was explained to the attendant. When first seen, patients were given a Cascara laxative, but after the first day, laxatives were used sparingly, because of the attendant unrest to the patient. The attendant was instructed to give the patient a low soapsuds enema every morning, and the use of a bed-pan insisted on. Fresh air and its importance in the treatment of this disease was explained to the attendants. I believe in plenty of fresh air in these cases, but I don't believe in having a freezing temperature in the sick room. There is such a thing as warm fresh air. The temperature of the sick room was kept from 50 to 60 degrees F. Windows were let down from the top, so as to insure plenty of circulating fresh air, but the patient was protected from drafts. Relatives and visitors were cautioned about entering the sick-room. Not infrequently I would find the entire family, five to eight in number, clustered around the sick-bed, thus further complicating the fresh air problem. Everyone was told to remain out of the room, with the exception of one or two attendants. Fever in the patient I found to be one of the greatest worries of the relatives. This did not alarm me particularly, and I explained to those in attendance that the fever was a physiological process and to be expected in this disease, that powerful drugs to overcome it would cause definite injury to the patient. I used no antipyretic drugs but relied on temperature sponges and pushing of fluids to control this symptom. In all cases over 103 degrees the patient was sponged with tepid water, followed by an alcohol rub every four hours as long as the temperature remained above 103. In some of the series where a persistent hyperpyrexia was present, packs of 50 per cent alcohol and water applied to the chest for one half to one hour at a time, served a very useful purpose.

I used few drugs in the treatment of this series. In infants and young children Elixir Terpin Hydrate cum Codeine was used, with the addition of Syrup of Hydroiodic Acid, in the unproductive cases. Mustard plasters may sound a bit old fashioned, but they helped a good deal, especially in infants and children. I prefer this to the mustard bath because it is less fatiguing to the patient, and easier to apply. The results have been just as good in my experience. These plasters were made by mixing one part of ground mustard and three parts of flour, with hot water added to make a paste. This was put between two pieces of cloth, large enough to cover the posterior chest, and another similar plaster prepared for the anterior chest. They were applied as hot as the patient could stand and left on from fifteen to thirty minutes and then removed. Applying olive oil to the skin afterwards prevents irritation of the skin. Usually three and sometimes four of these a day were advised. I have had excellent results with these in children, and feel confident that resolution and recovery was hastened two to three days by their use. Mustard plasters in children over twelve and in adults gave no results whatever and I have abandoned their use entirely in these older cases. In loosening the cough and relieving the harsh unproductive cough, in infants and small children, I have used steam inhalations with excellent results. Either plain steam from the teakettle or the addition of a teaspoon of Compound Tincture of Benzoin to a quart of water can be used. The mother here had to be instructed in the preparation of a croup kettle; a funnel was made out of newspaper and the small end attached to the steaming spout of the teakettle, and the steam conducted to the patient's bed through the funnel. They were kept up for about thirty minutes at a time, four to five times daily. This gave excellent results, especially in cases of a croupy character, where there was some laryngeal involvement as well as pneumonia.

The drug treatment in the adult cases was somewhat different. They received a cough mixture containing one-third to one-half a grain of codeine in each dose, with some mild expectorant. To all adult cases, at the outset, Tincture

of Digitalis was given. They received 25 minims four times a day for the first three days, and then 15 minims three times a day. This was given to support the heart and circulation. Morphin was used in adults whenever necessary to secure rest. It was given in small doses, and served to give relief from the racking and exhausting cough, and was conducive to much-needed and beneficial sleep. Of the stimulants used, for the critical cases, Caffeine Sodium Benzoate and Atropin Sulphate, both hypodermically, were used with the best results. In four of the cases, whisky was used along with the other measures. It was given in dram doses every three or four hours. I feel that the alcoholic content in whisky not only serves as a stimulant but also provides food and energy. Personally, I don't feel it is to be advocated as a routine treatment, but in certain cases serves a useful purpose. All of these four cases made excellent recoveries.

Complications.—These were few in this series of sixty-five cases. Two patients died, one an infant with a complicating meningitis, and the other an adult forty-two years old, who developed an active tuberculosis with positive sputum and died on the twenty-first day of the disease.

Ten of the infants and small children developed otitis media, and puncture of the drum was necessary in a few instances.

The diagnostic needle was used in several cases to determine the character of a pleural exudate, where it was felt an empyema might be developing. Small amounts of fluid were found in three cases, but pus in no instance. Not infrequently pus will be found on doing a thoracentesis, and then of course rib resection is necessary.

While albumin was found in the urine on several occasions, only one definite case of pyelitis developed in this series.

The time of the crisis in these patients varied greatly. Some developed the crisis in two or three days, and the longest time was ten days.

Aftercare.—The aftercare of these patients is particularly important. Depending on the severity of the case they were kept in bed seven to fourteen days after abatement of the fever and the symptoms. On the first day up, they were allowed to sit up in a chair fifteen minutes in the morning and thirty minutes in the afternoon. This was gradually increased daily. In practically all over ten years of age, a productive cough lasted for from one to three months after recovery. Creosote Carbonate seemed to assist in clearing up chronic coughs. Some were asked to come into the office for frequent lung examination, and in suspicious cases, the sputum was examined frequently. In doubtful cases *x*-ray examination of the chest was ordered.

ABSORPTION OF VITAMIN D THROUGH THE SKIN

The antirachitic factor, now commonly designated as vitamin D, which seems to be essential for the proper development and maintenance of the skeletal structures, apparently is not produced within the living body of man. The necessary supply is ordinarily derived either through the ingestion of antirachitic foods or through exposure of the skin to sunlight or ultraviolet rays. The last mentioned method is somewhat uncertain with respect to precise dosage. The alimentary path of introduction of the vitamin is usually the most convenient method for antirachitic therapy. Sometimes, through rarely, there may be barriers to its use; hence alternative procedures have been looked for. It has been found that the subcutaneous administration of cod liver oil may lead to curative results attributable to the fat-soluble vitamins. It has now been found that vitamin D as it is secured in irradiated sterols can be absorbed from the uninjured skin. The possibility of antirachitic therapy by inunction is thus presented. (Jour. A. M. A., June 18, 1927, p. 1970.)

SPAHLINGER TREATMENT OF TUBERCULOSIS

Notwithstanding the fact that the Spahlinger treatment of tuberculosis was secret and that evidence in its favor had not been made generally available, Spahlinger and his friends have repeatedly attempted to secure government endorsement of the preparation in England and to secure funds for its development. Now the records of ten patients injected by Spahlinger personally with this remedy have been reported by Dr. Thomas Nelson in the London Lancet. These records are decidedly unfavorable to the treatment. The evidence in favor of the Spahlinger method of treatment of tuberculosis is not sufficient at this time to warrant an extensive trial. The burden of proof is still on Spahlinger, who should at least show that in a considerable number of cases studied under controlled conditions the remedy will accomplish more than can be accomplished by the method of treatment now practiced in well regulated institutions for the treatment of tuberculosis. (Jour. A. M. A. Jan. 22, 1927, p. 248.)

THE PREVAILING TYPE OF TUBERCULOSIS OCCURRING IN CHILDHOOD*

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From the results obtained through the application of the Von Pirquet and Mantoux tests it is known that a vast army of children harbor a tuberculous focus (healed or unhealed) within their bodies. In a certain percentage of these children the clinician is able to demonstrate that the tuberculous process involves the bones and joints, the cervical lymph nodes, the brain and meninges and in a small group of cases the lesion is found involving the parenchyma of the lung. The combined total of these cases, however, constitutes only a small fraction of the multitude of children having positive tuberculin tests. It appears, therefore, that an inconspicuous lesion exists in the majority of these children, and the writer feels convinced from his experience as pediatrist at the Lymanhurst School for Tuberculous Children that this lesion represents the prevailing or common type of childhood tuberculosis. This common type of childhood tuberculosis apparently consists in an involvement of the glands at the hilus of the lungs, for among some 4,000 children examined at Lymanhurst, enlargement and calcification of these lymph nodes was, in the vast majority of these cases, the only lesion that could be demonstrated by most careful and thorough clinical and *x*-ray examination.

Many physicians, no doubt, can recall frequent instances where, in the course of the examination of a child running a slight fever, complaining of vague symptoms of fatigue and having a positive cutaneous reaction to tuberculin, the lungs are found to be absolutely free from disease. Physical examination and roentgen-ray plates in these instances, however, frequently reveal the presence of enlarged and calcified lymph glands at the hilus of the lungs. In addition, the *x*-ray may also demonstrate the presence of a tiny calcified lesion within the lung, adjacent to the enlarged hilus glands, which may be interpreted to be the primary tuberculous focus. When confronted with this meager array of findings appearing in the presence of a known and definite previous tuberculous infection as demonstrated by the positive cutaneous reaction to tuberculin, the clinician may find himself perplexed and at a loss to designate the condition existing in the patient by any term or diagnosis known, accepted, and understood by physicians in general. Furthermore, if he looks over the usual classification listed on various sanatorium application blanks, no classification or diagnosis is found by which this common type of childhood tuberculosis may be satisfactorily designated. However, in order to conform with established classifications, the physician may finally arrive at a diagnosis of incipient tuberculosis, and feel somewhat justified if not entirely satisfied with this conclusion through his knowledge that the detection of the disease in its incipient stage is difficult, is often missed, and thus may be present in the case in question, although undiscovered. The general tendency to think of tuberculosis as a pulmonary disease, particularly when its presence cannot be demonstrated in other parts of the body, may also influence one to incorrectly diagnose many of these children as having incipient tuberculosis, thus implying the presence of a minimal pulmonary lesion. Although pulmonary tuberculosis is the common type of the disease seen in adults, it is relatively seldom found in children, in spite of the fact that tuberculous infection is extremely common in childhood. Since pulmonary tuberculosis is relatively uncommon in children, it is evident that a diagnosis of incipient tuberculosis which implies the presence of an active pulmonary lesion is incorrect when applied to these cases. This is substantiated by the experience of the physician who sees these children having vague symptoms and positive tuberculin tests promptly return to good health when given proper care, or survive when apparently grossly neglected. These children practically never experience the disability or prolonged illness seen in adults in whom a correct diagnosis of incipient tuberculosis is made. The lesion found in the majority of children having positive tuberculin reactions unquestionably is distinctly different from that commonly occurring in adults and the prognosis is favorable.

Recently, the National Tuberculosis Association has adopted the report of the Committee on

*Read before the Staff of Glen Lake Sanatorium, Oak Terrace, March, 1927.

Classification of Juvenile Tuberculosis, and has added a new term, *hilum tuberculosis,* to the present classification by which this common type of childhood tuberculosis may be properly designated. For a discussion of the details of the criteria upon which a diagnosis of hilum tuberculosis may be made, the readers are referred

Fig. 1. X-ray showing calcified cervical glands in a girl aged 15.

Fig. 2. X-ray showing calcified cervical glands in a boy aged 11.

to the Report of the National Tuberculosis Association for 1925. In this article it will suffice to state briefly that a diagnosis of hilum tuberculosis should be based upon a combination of findings including a positive cutaneous tuberculin reaction, fatigue, under-nutrition, slight elevation in temperature, no pathology demonstrable within the parenchyma of the lungs, and *x*-ray evidence of definite enlargement and calcification of the lymph glands at the hilus of the lungs. In addition, other infections which may simulate this type of tuberculosis must be excluded. To those acquainted with the requisites upon which a diagnosis of hilum tuberculosis is based, the term, when used, will immediately convey a definite conception of the pathological condition found in the child, to the same extent that diagnoses of cervical gland, bone or other types of tuberculosis do. A clear conception of hilum tuberculosis also greatly simplifies the problem of the physician in properly diagnosing and evaluating the inconspicuous tuberculous lesion found in the majority of children with positive tuberculin reactions. Hilum tuberculosis of childhood is a condition having a good prognosis, for in the vast majority of these children the lesion tends to heal completely. For some apparently unknown reason, tuberculosis of glands in this region does not tend to suppurate with subsequent sinus formation as is common in tuberculosis of cervical lymph glands.

Children having hilus gland tuberculosis, properly diagnosed, do not require sanatorium hospitalization. The establishment for these children of schools such as the Lymanhurst school where the child receives medical supervision and instruction in personal care and hygiene is an ideal arrangement. Medical supervision of such cases is advisable, with special attention directed toward their restitution to proper nutrition, the provision of ample rest, and a general observance of régime conducive to the promotion of

good health. After a period of supervision when the nutrition is restored to normal, and no evidence of any activity of the lesion remains, the condition may then be diagnosed as healed hilum tuberculosis, even though the tuberculin reaction continues to remain positive.

From the foregoing it is seen that this common type of childhood tuberculous lesion is a glandular involvement, the hilus gland involvement being apparently far more common than tuberculosis of glands in other parts of the body in children. Although it is well known that the glandular pathology in the region of the hilus may be demonstrated, usually by means of the *x*-ray, the possibility of demonstrating the presence of lesions in lymph glands in other parts of the body, particularly in the cervical region, and also in the abdomen by roentgen examination, apparently has not received the attention it deserves. The presence of calcified intra-abdominal tuberculous lymph nodes as revealed by the *x*-ray plate has been the subject of recent articles by L. A. Rowden and Dunbar[1] and Smythe.[2] Also in the cervical region calcified glands may be demonstrated by means of the roentgen ray, as shown recently by Hanford,[3] who feels that the presence of calcification in the cervical lymph nodes is strong evidence that they are tuberculous, a point which may prove of value in differentiating this condition from other diseases of lymph glands in this location.

Recently at Lymanhurst several children have been found to have calcified cervical lymph nodes demonstrable by *x*-ray plates. The calcification present in two cases is shown in Figures 1 and 2. In these cases a diagnosis of tuberculous cervical adenitis has been made as a result of careful clinical study. In several other cases of undoubted tuberculosis of the cervical lymph glands in which suppuration with sinus formation and later scarring had occurred, calcification could not be demonstrated by roentgen examination. Apparently in these instances the calcified material had been completely discharged through the sinus that had formed.

SUMMARY

In children having a positive cutaneous reaction to tuberculin and presenting such symptoms as under-nutrition, fatigue, slight elevation in fever, and demonstrable enlargement and calcification of the hilus glands with no evidence of parenchymal pulmonary lesion or other disease which might present these symptoms, a diagnosis of hilus tuberculosis should be made. In using this term in the sense recently approved by the National Tuberculosis Association, the classification conveys to physicians familiar with criteria upon which such a diagnosis is properly made, as clear a conception of the pathological condition existing in the child as is implied in the more well recognized classifications such as bone and joint, incipient, moderately advanced and advanced pulmonary tuberculosis.

Hilum tuberculosis is a condtion presenting an excellent prognosis, and requires only common sense medical supervision without sanatorium care.

The most prevalent type of childhood tuberculous lesion is a glandular tuberculosis, of which hilum tuberculosis constitutes by far the greater part.

The lesions (calcification) in the glands may be demonstrated by means of the *x*-ray in the hilus, and also in the cervical and abdominal regions.

When tuberculous cervical glands suppurate with sinus formation, the calcified material apparently is discharged through the sinus formed. In such instances frequently no calcium is demonstrable in these healed cervical glands by means of *x*-ray plates.

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"LIQUID ARVON" DERMATITIS

Liquid Arvon, put out by the R. L. Watkins Company, Cleveland, has been reported to contain 4.84 per cent of alcohol by volume, 1.49 per cent of glycerin, and 0.42 per cent of potassium carbonate, with salicylic acid present and probably resorcinol. This hair tonic preparation is reported to have caused severe dermatitis of the scalp. (Jour. A. M. A., May 1, 1927, p. 1505.)

KLORON

Qualitative tests made in the A. M. A. Chemical Laboratory indicate that Kloron Tablets (J. I. Holcomb Mfg. Co.) contain Chloramine-U. S. P. as their potent ingredient. The claims made for the preparation are typical of the extravagant exploitation of official products by the "patent medicine" route. (Jour. A. M. A. Jan. 8, 1927, p. 119.)

FACTORS IN THE PROMOTION OF HEALTH IN DULUTH*

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During the summer and fall, considerable attention has been given in the newspapers to the fact that Duluth has a very low death rate. At times it has been, for a limited period, the lowest in the country among cities of its class. However, even in our community, there is a very considerable amount of preventable illness and death. About a thousand people die every year and about two thousand more are sick abed all the time. Approximately 3 per cent of all of us are literally put out of business, at least for the time being, and totally incapacitated.

A certain American humorist arrived in a town that had a death rate average of but one person per day and boasted of the fact to the lecturer. In great alarm he inquired whether anyone had died that day and after a messenger from the Court House had ascertained that the day's quota had passed to its reward, he went on with his lecture greatly relieved. How can we be reasonably sure that we and our folks are not among the every-day quota of the dead or disabled in Duluth without inquiring at the City Hall?

Advances in health security are based, as are advances in other lines, on accurate scientific knowledge. There is no hocus-pocus about it. Psychotherapy has its place and so has mechanotherapy, but blind surrender of community intelligence to pseudo-medical cults will not do much towards reducing death rates.

The father of modern medicine and surgery, Pasteur, was not a physician, but a pure scientist and research worker. He was no evolver of fanciful panaceas from his inner consciousness, but a faithuful and patient correlator of observed facts, a tireless seeker after truth. His discoveries led to others that have greatly reduced the sum total of human suffering and have prolonged the average span of life many years. His dream that communicable diseases might be banished from the earth is coming true and within limits a community may determine its own health.

The achievements of scientific medicine already recorded are astounding. Where 3,000 per 100,000 died annually in large cities, less than half that number now die (Ravenel: A Half Century of Public Health. N. Y. 1921, p. 101).

The marvels of surgery are well known to all of you. Pasteur's and Lister's work made it safe to open the abdomen and suppuration and gangrene which were formerly considered inevitable ceased. One by one great plagues have been controlled and sent skulking to the background. Small-pox, cholera, typhoid fever, yellow fever, diphtheria, tuberculosis are names that no longer strike terror in every heart as they did when they periodically swept thousands to premature graves. Reed, Lazear, Gorgas, Koch, Banting, Trudeau, and von Behring are glorious names in the history of medicine. Some were martyrs and should be revered as saints. In this case, it was not man's inhumanity to man that made countless thousands mourn, but man's humanity to his brothers that has given countless thousands reasons for rejoicing though they may not know or appreciate it.

Let us not forget in all our health propaganda that scientific medicine is the basis of health promotion and that we must consult the doctor and especially the medical research worker to know that we have solid ground for our projects and programs.

As regards Duluth, what are the facts about its situation and needs?

The death rate for Duluth in 1925 was 10.1 per 1,000 (U. S. Public Health Reports, June 11, 1926). In Austin, Minnesota, it was 9.8; in Racine, Wisconsin, 8.1; in Hibbing, 8.0; in Virginia, Minnesota, 7.7; in Bethlehem, Pennsylvania, 6.7. The rate for the entire country was about 12 per thousand. For the whole country in 1924 according to the U. S. Public Health Reports (January 1, 1926) the principal causes of death were:

	Per 100,000
Heart Disease	180
Apoplexy and Diseases of Arteries	120
Pneumonia	98
Tuberculosis	91
Cancer	92

*Read before the annual meeting of the Duluth Council of Social Agencies, Jan. 24, 1927.

Bright's Disease	90
Accidents, etc.	76
Diarrhea	43
	789
All other causes	400

The infant mortality rate for the country averages about 72 per 1,000 births, but New York City had a rate of only 64, and Seattle as low as 45.

The general order of precedence as to causes of death was practically the same in Duluth in 1924 according to figures furnished by the Health Department. There were 166 deaths from heart disease, 106 from apoplexy and diseases of the arteries, 99 from pneumonia, 65 from tuberculosis, 79 from cancer, 49 from Bright's disease, 41 from various accidents, etc. The infant mortality was 63 per 1,000 births in 1925.

The death rate is a somewhat imperfect index of the amount of illness in a community, as many are ill with non-fatal maladies. It is usually assumed on the basis of various surveys that for each case of death there are two cases of constant illness (Modern Hospital, January, 1927, p. 81). There are, therefore, without doubt over two thousand people constantly ill in Duluth.

We can infer something of the character of the non-fatal diseases which are constantly attacking Duluth residents from the cases reported in 1925, which were as follows (U. S. Public Health Reports, September 17, 1926):

	Cases reported	Deaths
Typhoid Fever	12	1
Smallpox	8	0
Scarlet Fever	112	4
Diphtheria	15	0
Infantile Paralysis	20	2
Measles	23	0
Chickenpox	438	0

The most complete analysis of sickness prevalence ever made for any community has just been completed for Hagerstown, Maryland, by the U. S. Public Health Service (Public Health Reports, September 27, 1926). The population of this city is about 30,000. Of a thousand cases of illness in 28 months the distribution was as follows:

Colds and Bronchitis	420
Influenza and Grippe	140
Digestive Disturbances	100
Epidemic Infectious Diseases	80
Tonsillitis and Sore Throat	60
Disturbances of the Nervous System	40
Accidents or External Causes	40
Disease of Heart and Circulatory System	20
Various Other Causes	100

Many factors are responsible for low mortality and morbidity rates besides organized health measures. The climate of a city, the average prosperity of its citizens, the character of the occupations followed, the density of the population, the housing conditions and ordinances, the water supply and smoke ordinances, the racial types resident, the kind of immigration taking place, the percentage of young people in the population. All these need consideration, but, whatever the effect of these conditions may be, there is no fact in human history better demonstrated than that a considerable degree of improvement in the health of any community can be secured by well directed, reasonable measures based on recent discoveries in medicine.

Communicable diseases can be controlled. Infant mortality and childhood morbidity can be reduced to a surprising degree. The experience of many cities gives eloquent testimony to such achievements and these two problems should be the major concern of our community. Already considerable progress has been made everywhere along these lines. As more children live to grow up and fewer people die of communicable disease, more attention will be given to the prevention of cancer, heart disease and various systemic and degenerative diseases.

Ten years ago, tuberculosis stood at the head of the list of causes of death, and a little earlier, typhoid fever had a prominent place. Many here present can remember the typhoid epidemic in Duluth in the nineties and the later one in Two Harbors. If it had not been for reduced death rates from these diseases, as many people as are present at this meeting would have died of them last year, who on the contrary are taking an active share in affairs. Perhaps half of those who would have been attacked are in this audience.

In 1901 the average expectation of life for a male child in the United States was 48 years;

now it is 54 and in Minnesota almost 60 years. In the eighteenth century in Massachusetts it under 30 years. What about the good old times? In Queen Elizabeth's time it was about 20 years.

The principal agencies directly concerned in the promotion of health in a community are the medical profession, the nursing profession, the hospitals and the health department. Their activities may be either in disease prevention or in its cure. Doctors, nurses and hospitals have been so largely concerned with the actual invalid patient and the relief of his complaints that the possibilities of achievement open to them in the prevention of disease have been overlooked. Prevention is, of course, at least sixteen times more valuable to the community than cure, but never seems as urgent. We must have doctors and good doctors when we are sick but we do not realize how much we need them when we are well. We will willingly pay from 50 to 500 dollars every year to have the automobile overhauled and kept in good running order but we begrudge the doctor five dollars for an annual once over for our bodies on our birthday.

We don't take the car to a tinker but to the best auto mechanic we can find. Many medical men have spent some years in pre-medical work, four years in medical college and a year or more in post-graduate study in hospitals.

There are about 130 physicians in Duluth, a proportion of about one to 800 people. For the whole country there are about 160,000 physicians —a proportion of one for less than 800, for Minnesota 2,823 or about one for 830 people. So Duluth is well supplied but not over supplied with competent physicians.

Why should not the average citizen go to his doctor and say: "I want to engage your services for a periodical check-up of the health of myself, my wife, and my children. For this service, I am glad to pay you a hundred or two hundred or five hundred dollars a year. I know your time is valuable but I know your reputation and skill and I want you to keep us well. We, as our part, bind ourselves to follow your advice." Quite likely some of the doctors would be unwilling to consent to such an arrangement, as the possibilities of successful and remunerative practice in preventative medicine have not yet been demonstrated.

The nursing profession as a whole is also engaged in curative practice rather than in prevention. However, when drafted into service as public health nurses, after suitable preliminary training, they have proved splendid agents for getting the new knowledge of disease across to large groups of people. In the end the wide dissemination of accurate information regarding illness, its prevention and cure can only lead to more reliance on skilled physicians and be of benefit to the medical profession as well as the entire community. There is little danger that it will lead to the dreaded "State Medicine." This in turn will increase the demand for well trained nurses. At the present time, there are about 220 registered graduate nurses in Duluth and about 17 public health nurses working for the Health Department, the Board of Education, the Insurance Companies the Steel Plant, the Masonic Fraternity, The Red Cross, etc. We need many more.

Like the curative work, disease prevention work and the public health promotion work of nurses should be conducted under medical supervision. The work of the five St. Louis County Nurses under the supervision of Dr. H. G. Lampson, whole time County Health Officer, has been of very great value in preventing epidemics in the rural districts.

Hospitals are more than ever needed in the progressive community. The development of diagnostic procedures and of special treatments available only in hospitals has increased the expense of erection and maintenance until now the modern hospital costs on an average $4,000.00 per bed to build and $4.00 or more per patient per day to maintain.

A city of 100,000 people should, according to the American Hospital Association estimates, have about 600 beds, or one for every 166 persons. Duluth has about 590. The average number of hospital beds in Minnesota is 340 per 100,000 and for the United States is 258.

The relation of hospitals to the community and their responsibility for follow-up work and health education is only just beginning to be realized.

New hospitals will be needed from time to time. There will be needed a community convalescent hospital where out-door rest treatment such as used for the tuberculous patient will render more effective the emergency surgery done in the general hospital, and an observation hospital or department where mental cases can

be studied before being sent to State hospitals for the insane and where borderline cases can be treated and in many instances returned to their homes as useful citizens.

Before new general hospitals are built by the community, it should be realized that a modern hospital of 100 beds costs nearly half a million dollars to build and about a quarter of a million yearly to maintain. Sources of income to meet this outlay should be in sight. The need for additional beds should be evident.

The expense of the average citizen for medical and hospital care should be provided for in wages paid and budgets made by the citizen himself. There is at present comparatively little saved for a rainy day in the average family. A case or two of tuberculosis lasting for maybe several years would bankrupt the average family if the community had no sanatorium.

Besides the medical profession, the nurses and the hospitals, a fourth and very important agency in the promotion of health is the Health Department. In a study made last summer by the Public Health Committee of the Chamber of Commerce, certain facts became clear. One of these is that careful analyses of the health work of a great many cities, including Duluth, have recently been made by competent authorities and that the results of these studies are available at the Public Library for the use of anyone who wishes to ascertain actual or recommended standards.

The report made in 1923 of an investigation of the health activities of 83 cities of more than 100,000 population by a committee of the American Public Health Association in co-operation with the United States Public Health Service includes a special section on Duluth. In 1925 another report appeared covering the activities of 86 cities of from 40,000 to 70,000 population. This was prepared by a Committee of the American Child Health Association, of which Herbert Hoover is president.

The former of these reports outlines an ideal health budget for a city of 100,000 and the latter one for a city of 50,000.

Besides these two comprehensive reports, elaborate special studies have been made of health conditions in individual cities, including Cleveland, Springfield and Louisville.

While every city has its own special problems the underlying principles brought out in all these studies are the same. According to these reports the functions of a city health department are limited to education and preventive medicine. The cure of disease and municipal housekeeping are functions of other departments of the city government though they may happen to be administered under the supervision of the health officer. While the maintenance of hospitals and the collection of garbage have an influence on health, they are not considered primary functions of the department and its standing as regards constructive health work is not judged by expenditures for such purposes, necessary though they may be.

According to all of these reports the primary purpose of the health department is the control and prevention of disease. Whether the work done is above or below standard must be determined by an analysis of the activities strictly concerned with health conservation. These are classified under the following main divisions: Administration, Sanitation, the Control of Communicable Disease and the Conservation of Child Health. Much of the work of the modern health department is educational and comparatively little of it exercise of police power.

To assist local health officers in analyzing the health work of their own cities, the American Public Health Association, which is an organization composed largely of city health officers, has prepared an appraisal form for city health work.

Dr. L. A. Sukeforth, Director of Public Health, and Mr. M. P. Orchard, Secretary of the Department of Health, co-operated with the committee in furnishing data for the completion of such an appraisal.

The population of Duluth according to the federal census of 1920 was 98,917. The U. S. Census estimate for the current year (1926) is 113,000.

It was found that the total expenditures by the Duluth Health Department for the prevention of disease had each year since 1919 been under $50,000.00 and that there had been practically no increase in budget as the population of the city grew from 99,000 to about 115,000. In certain important disivions, there had even been retrenchment. In the meantime, some 33 large cities were spending more per capita for health promotion through their health departments than Duluth.

As compared with the average run of cities of

approximately the same size, Duluth's per capita expenditures for health purposes, through the health department, were about the same though very much less than the budget of the Committee of the American Public Health Association.

The measures adopted for health promotion through the health department are supplemented here as in the case of other cities by the activities of various official and voluntary agencies including the Department of Education, the State Department of Health, the Sanatorium Commission, the County Public Health Association, the Masonic Fraternity, the Life Insurance Companies and the American Red Cross. The total amount expended by these agencies is estimated at $50,000, making with the $50,000 spent through the Health Department about $100,000 or not quite one dollar per capita for disease prevention and health promotion.

The committee of the American Public Health Association does not consider an expenditure of two dollars per capita excessive for these purposes.

Demonstrations financed by the Metropolitan Life Insurance Company and various philanthropic foundations and sponsored by National health agencies have demonstrated that such investments in health pay. A notable example is the Framingham demonstration in Massachusetts which was continued through a period of five years with marked reduction in death rate.

While voluntary organizations will always be needed to lead the way, the major part of the work should be under the control and supervision of a progressive health department and the expense should be borne by the citizens as a whole.

The day when the work of the Health Department was largely police work and municipal housecleaning has passed. Today, in progressive communities, it consists mainly in education and should be limited to the following activities:

Administration
Sanitation
Child Welfare Promotion
    Prenatal Work
    Infant Hygiene
    School Hygiene
Control of Communicable Disease
Vital Statistics and Research

The most useful agents of the health department are not sanitary inspectors but public health nurses, and the committee of the American Public Health Association recommends the employment of thirty or more in a city of 100,000.

The committee recommended expansion of the following divisions of the Health Department work: Child Welfare, Public Health, Education, Nursing and Tuberculosis Supervision. The report is on file at the Duluth Public Library.

It is suggested that organizations vitally interested in the health of the community which should stand behind the Health Department and be ready to furnish intelligent counsel as well as powerful influence on public opinion include the Duluth Council of Social Agencies, the Taxpayers League, the St. Louis County Medical Society, the St. Louis County Public Health Association and the Duluth Chamber of Commerce.

The City of Duluth should not decide to establish or maintain additional hospitals for the cure of disease without careful study of the need of expenditures for the prevention of disease and the promotion of health.

The plan recently suggested and approved by the Public Health Committee of the Chamber of Commerce for co-operation between the governing bodies of the City Contagious Hospital, the proposed Miller Hospital and the County Hospital is worthy of careful consideration if it becomes apparent that additional hospital facilities are needed.

In conclusion, the Duluth Council of Social Agencies should go on record as asking for repeated checking up of the work of the Health Department by the new standards available which, based on studies of the health activities of 169 cities, should aid and support the health authorities of the city in the preparation of an adequate budget to secure the full financial and health benefit which may be derived from health promotion methods of demonstrated value.

Concerted studies and action by the Health Department, the County Medical Association, the County Public Health Association, the Chamber of Commerce and the Council of Social Agencies and the Taxpayers League would crystallize public opinion in favor of definite measures for which there are abundant precedents and standards.

OPHTHALMOSCOPIC EVIDENCE OF GENERAL CIRCULATORY DISEASE*

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St. Paul

The ophthalmoscopic evidence of circulatory and renal disease is appreciated only as we learn to properly interpret the significance of the various changes found. The ophthalmoscopist associates certain fundus changes with definite general diseases—hyperpiesis, arteriosclerosis, nephritis, diabetes, hemic conditions, syphilis, or some general or focal toxic infection. They indicate to him the necessity of exhaustive physical examination of the circulatory system and eliminative organs, or search for possible sources of toxemia. The changes fall into two main groups: (1) those which have to do almost entirely with the circulatory system, and (2) those which are manifestations of toxemia. Often one produces the other, or the same causes produce both, but the predominance of the toxic or the circulatory factor, or the order of sequence in their development, may be of the utmost clinical significance. The changes found may be too complex, of themselves, to permit exact analysis of their origin, and only occasionally may an arbitrary diagnosis be made from fundus changes alone. Practically all visible retinal pathology results from causes which manifest themselves through vascular changes. The evidence available to the internist with the retinal vessels visible under magnification of about fifteen diameters makes the ophthalmoscopic findings of especial value in patients with cardiovascular renal syndrome. Cohen[1] proved that choroidal vessels share in vascular changes and may undergo even greater degree of angiosclerosis than the retinal vessels but, obviously, the evidence of choroido-vascular disease is less frequently visible. The most frequent changes met with in fundus examinations have to do with hyperpiesis and arteriosclerosis.

The study of retinal evidence of hypertension has followed the routine measurement of blood pressure as a part of physical examination but the first published case showing ophthalmoscopic evidence of hypertension was in 1892 by Marcus Gunn,[2] before the use of instruments for recording blood pressure. Although thirty-three years have added much to his observations, in the main we must adhere to his description, which was as follows: "The arteries have an exceptionally bright reflex. The central light streak is very distinct and sharp, producing a metallic appearance like bright copper wire. This condition has been observed in chronic albuminuria and in several cases where no albumin is found, or where high tension suggested the probability of changes in the arteries, usually associated with those of chronic renal disease. The ophthalmoscopic appearance is presumably due to hyalin degeneration of the arterial wall. Attention is directed to the effect produced on the veins by arteries overlying them. Where an artery, even a small twig, passes over a retinal vein, the circulation in the latter is much impaired. In some cases the vein is indistinguishable just at the spot where it is crossed and is evidently distended for some distance peripherally from this point. The appearance is interpreted as evidence of high arterial tension." In addition to the foregoing, the picture may show evidences of toxemia, namely, cotton-wool exudates or edema of the nerve-head and neighboring retina.

In simple high blood pressure independent of other retinal evidences of toxemia or angiosclerosis, there are certain cardinal signs. The first of these is a marked increase in prominence and breadth of the arterial light reflexes, with elongation and tortuosity of the retinal vessels, especially the smallest terminals and macular twigs. Later the vessel wall becomes thickened from endoarterial proliferation and increase in the medial coat, and the arteries appear uniformly contracted, of lessened caliber, the reflex arterial light stripe is narrowed, the veins are congested, and about double the normal size. The outstanding phenomenon is the apparent interruption in the venous circulation where the veins are overlaid by arteries at points of crossing, in the manner described by Gunn. It is now generally accepted that the hyperpiesia is arteriolar in its origin.

If, with high blood pressure, there is marked arteriosclerosis, certain further changes are evident which have very decided diagnostic and prognostic value. When high blood pressure is

*Read before the Minnesota Academy of Medicine, May 13, 1925. From the Miller Clinic, St. Paul.

followed by, or follows, marked angiosclerosis, the type of the arterio-venous crossings, as pointed out by Mr. Foster Moore,[3] differs from the type found in hyperpiesis. Where an artery crosses a vein, it does so by the shortest possible route and one sees a so-called "right-angle crossing," with an appearance of actual interruption in its course. "The vein, though meeting the artery normally at about an angle of, say, 30 degrees, and leaving it at a similar angle, passes under it at right angles to its course." "A similar phenomenon may be seen when a vein crosses over a sclerosed artery." This is illustrated in Plate I where the artery and vein cross. This phenomenon is attributed not only to the tightness of the vessel and its translucency, from hyaline or fibrous thickening in its wall, but also to direct mechanical effect of pressure of the sclerosed artery upon the thinner walled vein. It constitutes the most constant evidence of arteriosclerosis with hypertension. In addition one commonly observes the smaller terminal vessels surrounding the macula and near the disc having a decidedly corkscrew appearance indicative of hypertension and venous stasis.

One frequently sees marked evidence of arteriosclerosis without hypertension. The outstanding characteristic of advanced arteriosclerosis is the irregularity in caliber of the arteries. Not only is the caliber of all arteries often apparently uniformly decreased, giving rise to the appearance of contraction, but in places one frequently sees them very uneven and patchy and presenting a beaded appearance; or more commonly the narrowing of the lumen is gradual, again becomes normal, and further along the course of the vessel shows the same phenomenon repeated. In extreme cases the lumen may become completely obliterated in places as a result of subendothelial proliferation. Such changes are indicative of quite advanced arterial change. At other times, especially in syphilis, a perivasculitis occurs, with marked evidence of thickening of the adventitia. In such cases, there is a sheath of connective tissue enveloping the arteries for some distance from the disc, after which the arteries appear to be narrowed. At other times, the vessel shows a type of "pipestem sheathing." Personal observations of arteriosclerosis in senile patients confirms the statement of Wagener[4] and others that irregularities in caliber are sometimes less prominent in the aged. The explanation for this is probably due to the fact that senile vascular sclerosis occurs principally in the elastic coat and that changes in the middle coat are more uniform in senile atheromatous or sclerosing types; also the light reflex phenomenon is rarely so prominent unless accompanied by hypertension.

Mr. Foster Moore[5] first described the type of angiosclerotic retinitis which is distinct from that seen in connection with renal disease. When present it is to be accepted as evidence of vascular changes of long standing. He emphasizes the distinction between this type of retinitis and that which characterizes renal disease. It is much more frequent when hypertension accompanies angiosclerosis, and is characterized by bright white spots or dots in the retina, seldom of greater diameter than the veins, with no exudate around them. Their favorite site is along the main vessels near the nerve-head, in and around the macula, or between the macula and the nerve. These spots are sharp-edged, round or oval, seldom distinct, and probably represent degenerative or nutritional changes in or near the lamina vitrea, very small patches of localized exudate, or hemorrhage in the superficial choroid or deep retinal layers. These spots may entirely disappear and new ones form. The presence of marked arteriosclerotic retinitis is of prognostic value both as to the association with cerebral vascular lesions and duration of life. Occasionally, stellate formations around the macula or a fan-shaped figure between the disc and macula may be observed. These spots are distinctly different from the toxic changes, white wool patches or so-called snow-bank exudates, noted in renal retinitis. Stellate figures represent a sequence of macular edema and are considered by most ophthalmoscopists as evidence of interstitial nephritis, but they occur with syphilis and not infrequently with venous thrombosis and even choked disc. According to Cushing and Bardley[6]: "Undoubtedly, so-called albuminuric retinitis is, in large part, a local edema of mechanical origin." Uremia produces increased intracranial pressure and pressure in the nerve sheath. Indirectly, mechanical stasis contributes to the blood toxin factor in producing the retinal manifestations of toxemia, and it must ever be borne in mind that urea nitrogen is not

Age 47. Chief complaint, headaches. B.P. 190/120 to 235/140. Urinalysis: trace of albumin, a few hyaline casts. Blood chemistry normal. Wassermann, negative. Fundus shows hyperemia of disc with new-formed blood vessels on the disc. Arteries show prominent light streaks, variations in caliber, both arteries and veins with corkscrew terminals. Typical arteriovenous crossings. A few scattered petechial hemorrhages and exudates. Diagnosis: Essential hypertension. Subsequent history: stroke three years later; death five years later from cardiac and renal complications.

Plate I

Blood pressure was 215/130 at the time this drawing was made. Neither albuminuria nor urea nitrogen retention were prominent symptoms. The ophthalmoscopic evidences of toxemia predominate although moderate hypertension and arteriosclerotic changes are present. This case was diagnosed malignant hypertension by several very good internists.

Plate II

Plate III

J. S., aged 50. Fundus shows narrowing of all inferior branch arteries with loss of field of vision over corresponding area. Diagnosis: Obliterating arterial thrombosis following angiospasm.

P. T. J., aged 70. Sudden loss of vision Nov. 14, 1924. Cardiac hypertrophy. B.P. 251/110. Urine repeatedly negative. Moderate evidence of general arteriosclerosis. Fundus shows exaggerated light streaks on most of the arteries and to a lesser degree along the veins also. Marked variation in caliber of superior nasal vein. Complete obstructive thrombosis of superior temporal vein beyond point of crossing over sclerosed artery at disc margin, resulting in stasis and extensive hemorrhage beyond thrombosis. Scattered "white spots" of arteriosclerotic retinitis. Diagnosis: Hypertension and arteriosclerosis, thrombosis of superior temporal retinal vein.

Plate IV

the only factor, and not necessarily the principal blood toxin, producing the changes we find. Other toxins, many hemic conditions, and products of perverted metabolism, may be very important causes. Nevertheless, when seen with hypertension and arteriosclerosis, with scant albumin or a few casts, we may assume we are dealing with a process in the kidney essentially of the sclerosing type, the so-called arteriosclerotic kidney, although these patients may survive many years after retinal changes are found, and die quite frequently of cardiac or cerebral complications and not with uremia.

"Malignant hypertension" is now receiving special consideration as a clinical entity in which characteristic retinal changes are fairly uniform. The disease is characterized by high diastolic pressure, without very definite renal insufficiency; there is cardiac hypertrophy with peripheral sclerosis; anemia is not marked and the kidney changes are not accompanied by albuminuria until late. One does not get laboratory reports of marked urea nitrogen retention in the blood. The disease usually terminates with cerebral or cardiac complications rather than in uremic coma. According to my observations the retinitis of malignant hypertension quite uniformly presents the appearance of advanced arteriosclerosis and hypertension, combined with toxic neuroretinitis resembling that seen with toxemia of pregnancy, although the edema exudates, hemorrhages and stellate macular changes are less pronounced during early stages. The retinitis always accompanying malignant hypertension is an important part of the clinical picture, and, in conjunction with the clinical and laboratory evidences manifest, forms an important link in diagnosis. It is well illustrated in Plate 2 from a patient who complained of slight visual impairment. The retinal evidences as shown by variation in arterial caliber, interrupted arteriovenous crossings, with areas of increased arterial light reflex, localized edema of the retina, a few exudates and hemorrhages, with optic neuritis, may be accepted as evidences of malignant hypertension, when considered with laboratory reports and physical evidences mentioned above.

Retinal hemorrhage in purely sclerotic changes represents evidence of stasis and hypertension plus degenerative changes in the vessel walls, permitting diapedesis. One does not frequently see hemorrhage in essential hypertension, without evidence of arterial degeneration. Likewise, in senile angiosclerosis without hypertension, hemorrhage is comparatively rare. Most frequently the combination of arteriosclerosis with increased intravascular tension or venous stasis results in hemorrhages. These are commonly small, flame-shaped, and limited to the nerve fiber layer of the retina. Less frequently they are circular, petechial in type, pale in appearance, usually near the large vessels, representing extravasation into the granular layers. They may be absorbed and leave no trace, or be followed by patches of atrophy when absorbed, or occasionally some pigment disturbance follows. Occasionally, a slight trauma may be the immediate cause of extensive hemorrhage. Subhyaloid extravasations over a very extensive area frequently follow comparatively insignificant injuries, usually have their site at the macula, often becoming absorbed without leaving a trace, or with very little pigment disturbance.

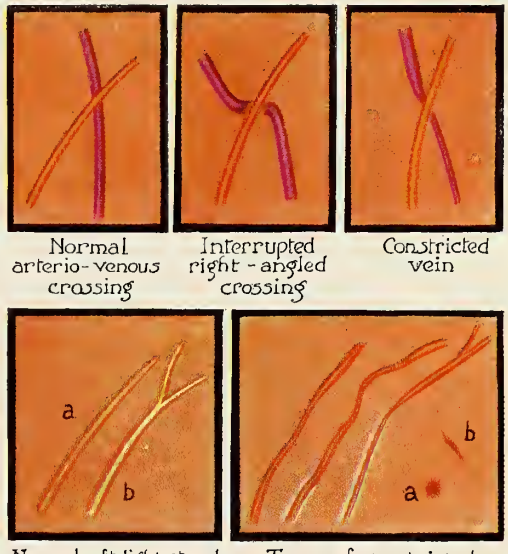

Plate V

Showing typical changes in the retinal blood vessels in arteriosclerosis and hypertension.

One occasionally finds an unusual condition of marked tortuosity of the retinal veins, extending even to the smaller branches. In contrast to the tortuosity of the veins is the exceeding straightness of the arteries. The condition indicates

venous stasis, either from local causes in the orbit or from general causes, or the condition may be purely mechanical from anatomical or orbital pressure, the physical findings revealing no general systemic or organic disease. In patients with patent foramen ovale or pulmonary stenosis, one frequently sees a cyanotic fundus with markedly dilated and tortuous retinal vessels, especially the veins. The retinal arteries are much darker than normal and somewhat resemble the veins in color. A similar condition occurs in erythremia, although in this condition the arteries are not much affected. In severe cases the veins are extremely cyanotic and tortuous, the cyanosis probably due to insufficient oxidation as well as stasis. In marked aortic regurgitation distinct pulsation of arteries is commonly observed.

All evidences of circulatory disease are not manifested by hyperplastic or degenerative changes in the vessels. Not uncommonly a patient in middle life presents himself for examination with a history of sudden blindness caused by embolism of the central retinal artery. Ophthalmoscopically, one finds a complete obstruction of the central retinal artery, or one of its branches, evidenced by great reduction in the size of the vessels, usually a localized edema of the macula and a marked retinal anemia. The arteries may appear reduced to mere threads and the smaller ones invisible. Usually, the nerve atrophies and blindness is permanent unless immediate restoration of the circulation is established. The case may be one of mitral disease, the blindness caused by separation of detached valvular vegetation finding lodgment in the retinal artery. Most cases diagnosed as embolism of the retinal artery are really due to thrombus formation in which the lumen of the vessel, already narrowed from proliferation of its endothelium, has become suddenly occluded. It should be borne in mind that a single branch artery may frequently show ophthalmoscopic evidence of obliterating endarteritis. (The reader is referred to textbook illustrations of "Embolism of the central retinal artery.").

A more unusual affair is illustrated in the following case with obstruction to retinal circulation, undoubtedly caused by angiospasm of the vessels with arteriosclerosis and later hypertension.

F. S., aged 50, came February 27, 1918, for refraction. His vision was normal with corrected refraction and the fundi were normal. September 18, 1924, he had a peculiar attack of blindness in the right eye which lasted three or four minutes, and other attacks of dimness of vision for periods of several minutes, affecting the right eye only, during the succeeding days. On September 24, 1924, when I saw him, nothing abnormal was found on opththalmoscopic examination excepting the right inferior temporal vein was much larger than any of the others.

It was then suspected that he must have had retinal amaurosis, probably due to angiospasm. He was referred to Dr. E. M. Hammes, his physician, who reported that he had myocarditis, blood pressure 108, urine normal. Otherwise, exhaustive physical examination revealed nothing. On December 18, 1924, he returned. Vision was 20/30. He had had an attack of blindness in the right eye, lasting about an hour, from which he only partially recovered. Since that time he has seen only the lower half of objects with the right eye. Perimetric examination of the visual fields showed altitudinal hemionopsia in the right eye. Ophthalmoscopic examination showed a definite narrowing of the lumen of the entire inferior branch of the retinal artery. The vein apparently lies over the artery and was not now abnormally dilated as was noted four years before. The inferior artery is less than one-fourth normal caliber, the light streaks entirely absent; the terminal vessels seem all but obliterated toward the periphery. There are two interrupted crossings where the superior temporal artery and vein cross and at the inferior arterio-venous first crossing. No hemorrhages or exudates were visible. Examination of the left eye showed practically the same type of crossings, no other marked evidence of arteriosclerosis being present.

Further report by Dr. E. M. Hammes on December 29, 1924, follows:

Family and personal history negative. His present difficulty dates back two years when he began to have left occipital headaches of an intermittent type, associated with nausea and vertigo. During the past eight months he has fatigued easily, has had periods of dizziness and staggering and more headaches than usual, always left-sided and migrainous in type. Examination showed no physical or organic defect other than a well compensated mitral regurgitation. Blood pressure 160/90, urine negative, blood and spinal fluid normal, Wassermann negative. Neurological examination entirely negative.

This case (Plate 3) is diagnosed as one of arteriosclerosis and angiospasm with obliterating endarteritis of the inferior retinal arterial branch, caused by angiospasm. This latter diagnosis is based upon the history of temporary blindness four years previously, with ultimate loss of the upper field of vision from closure of

the arterial lumen. It is difficult to believe an embolism would be likely to affect the same artery many times.

Thrombosis of the central retinal vein or of one of its branches is not very infrequent and almost invariably caused by pressure of a sclerosed and thickened artery upon the vein. This may occur either where the vein enters the optic disc or where a branch vein is crossed by an artery. The thrombus produces venous stasis resulting in extensive hemorrhage which may completely obscure the nerve-head, leading to confusion with monolateral choked disc, when the central vein is compressed. In the case of involvement of a venous branch, most frequently the right superior temporal, the resulting hemorrhagic extravasation is localized around the particular branch involved (Plate 4). Newly formed blood vessels may reestablish circulation around venous obstruction of a branch vessel and vision may not be too seriously damaged, but acute glaucoma is a possible complication of every thrombus of the central vein, disastrous in its damage to vision if not to the eyeball itself. Only once have I met with thrombosis in both eyes, with an eight year interval before involvement of the second eye. Glaucoma produced blindness in both eyes. The prognosis in these cases is frequently better than one would expect, many cases living for ten or fifteen years. The majority die of cerebral apoplexy.

From the prognostic standpoint the ophthalmoscope reveals distinct evidence bearing upon the type and stage of circulatory disease. In connection with retinal angiosclerosis as an index of the condition of the cerebral vessels, Knapp[7] states that marked changes in the retinal vessels indicate a similar state in the cerebral vessels, but not the reverse. Moore,[8] in a series of sixty-six patients, found that 44 per cent developed cerebral hemorrhage or thrombosis, hemiplegia or monoplegia, within seven years of the period when marked evidence of retinal sclerosis and hypertension was first noted. Likewise, in a series of cases admitted to the St. Bartholomew's Hospital with cerebral lesions of vascular origin, retinal evidence of angiosclerosis was present in 70 per cent of them. In the absence of albuminuria especially, the retinal vessels present a fairly good index of the state of the cerebral vessels in patients past middle life.

It is necessary to emphasize the essentially different type of changes seen in arteriosclerosis and hypertension from those which distinctly characterize renal retinitis. In albuminuric or renal retinitis, the characteristic evidences of break in renal function are edema of the nerve-head, or edema in the retina around the disc or macula, with soft woolly patches and hemorrhages which are often diffuse, or border the patches of exudate. When albumin and casts are present, it usually represents parenchymatous nephritis.

The ophthalmoscopic picture is very frequently a most complicated one with all the signs of toxemia superadded to those of angiosclerosis plus hypertension. No single feature or change found with the ophthalmoscope has great diagnostic value considered *alone*. When several signs are present, and considered with the other physical findings, they contribute information of value, both in diagnosis and prognosis. When evidence of beginning retinal angiosclerosis is present in a person in middle life, especially also if the evidence of increased intravascular tension is marked, we may be able to seek for causative factors and remove them at a time when preventive measures may do some good. It is not always possible to diagnose types of cardiac or renal disease, syphilis, or intracranial lesions by fundus examination alone, without the aid of the internist, the neurologist and the laboratory, but the ophthalmoscope very frequently affords information of value in estimating the extent to which the disease has progressed. For this reason, it is of utmost importance that we be able to recognize, properly interpret and evaluate the vascular changes visible with the ophthalmoscope.

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The writer is indebted to Miss Jean Hirsch of the medical art department of the University of Minnesota and to Mrs. Hal McWethy of Saint Paul for drawing the fundus pictures illustrating this article.

NEW AND NON-OFFICIAL REMEDIES

The following article has been accepted by the Council of Pharmacy and Chemistry

H. K. Mulford Co.

Antivenin (Nearctic Crotalidæ)-Mulford.

TRUTH ABOUT MEDICINES

Neonal—*N*-Butylethylbarbituric acid.—Neonal differs from barbital (diethylbarbituric acid) in that one of the ethyl groups of the former is replaced by a normal butyl group. The actions and uses of neonal are essentially similar to those of barbital, but it is about three times as active as the latter; hence it is used in correspondingly smaller doses. It is claimed that it exerts a sedative action to an exceptional degree, and that it is useful therefore in high nervous tension, neuroses and other conditions in which a sedative is required. Neonal is supplied in powder and in 0.1 Gm. tablets. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., June 4, 1927, p. 1802.)

Pollen Extracts-Cutter.—These are now marketed in capillary tubes and in packages consisting of three vials representing graduated concentrations. In addition to the products listed in New and Non-official Remedies, 1927, p. 34, the following have been accepted: Alkali Weed Pollen Extract-Cutter; All Scale Pollen Extract-Cutter; Box Elder Pollen Extract-Cutter; Burning Bush Pollen Extract-Cutter; Corn Pollen Extract-Cutter; Foxtail Pollen Extract-Cutter; Mountain Cedar Pollen Extract-Cutter; Tumbleweed Pollen Extract-Cutter; Western Water Hemp Pollen Extract-Cutter. Cutter Laboratory, Berkeley, Calif.

Pollen Extracts (Glycero-Saline)-Mulford.—Liquids obtained by extracting the dried pollen of plants with a liquid consisting of 66 2/3 per cent of glycerin and 33 1/3 per cent of saturated sodium chloride solution. For a discussion of the actions and uses see Allergic Protein Preparations (New and Non-official Remedies, 1927, p. 23). Pollen extracts (glycero-saline)-Mulford are marketed in bulk treatment packages and in treatment sets consisting of: First series (doses 1 to 5, inclusive); second series (doses 6 to 10, inclusive); third series (doses 11 to 15, inclusive); complete series (doses 1 to 15, inclusive); fourth series (doses 16 to 20, inclusive). The following preparations have been accepted: Lamb's Quarters Pollen Extract (Glycero-Saline)-Mulford; Ragweed Pollen Extract (Glycero-Saline)-Mulford; Timothy Pollen Extract (Glycero-Saline)-Mulford; Wormwood Pollen Extract (Glycero-Saline)-Mulford. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., June 11, 1927, p. 1891.)

Ethylene-C. L. P.—A brand of ethylene for anesthesia-N. N. R. For a discussion of the actions and uses see New and Non-official Remedies, 1927, p. 50. Certified Laboratory Products, Glendale, Calif.

Protein Extracts Diagnostic-P. D. & Co.—In addition to the products listed in New and Non-official Remedies, 1927, p. 40, the following have been accepted: Alfalfa Pollen Protein Extract Diagnostic-P. D. & Co.; Bean (Kidney) Protein Extract Diagnostic-P. D. & Co. Parke, Davis & Co., Detroit.

Typhoid Vaccine (Prophylactic) (New and Non-official Remedies 1927, p. 369).—This product is also marketed in packages of one 20 c.c. vial containing 1,000 million killed typhoid bacilli per c.c. Parke, Davis & Co., Detroit.

Typhoid-Paratyphoid Vaccine (Prophylactic) (New and Non-official Remedies, 1927, p. 369).—This product is also marketed in packages of one 20 c.c. vial containing 1,000 million killed typhoid bacilli and 750 million each of killed paratyphoid bacilli A and B per c.c. Parke, Davs & Co., Detroit.

Horlick's Maltose-Dextrin Milk Modifier.—A mixture containing approximately: maltose, 63 per cent; dextrin, 19.5 per cent; protein, 11.5 per cent; fat, 1.4 per cent; moisture, 2 per cent; and ash, 2.6 per cent. On the claim that maltose is more readily assimilable than other forms of sugar, this product is proposed to supplement the carbohydrate of cow's milk. Horlick's Malted Milk Corporation, Racine, Wis. (Jour. A. M. A., June 18, 1927, p. 1967.)

B. Acidophilus Milk-Fairchild—A whole milk cultured with *B. acidophilus.* It contains not less than 50 millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1927, p. 216, "Lactic Acid-Producing Organisms and Preparations." Fairchild Bros. & Foster, New York. (Jour. A. M. A., June 25, 1927, p. 2035.)

MINNESOTA MEDICINE

OFFICIAL JOURNAL MINNESOTA STATE MEDICAL ASSOCIATION, SOUTHERN MINNESOTA MEDICAL ASSOCIATION, NORTHERN MINNESOTA MEDICAL ASSOCIATION, AND MINNEAPOLIS SURGICAL SOCIETY

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Vol. X August, 1927 No. 8

EDITORIAL

The State Meeting

Another milestone in the history of our State Association was passed at the Duluth meeting. Interest in state medical activities was manifest by the registration of 517 members, fully a quarter of the state membership.

The outstanding achievement of the year was the success of the legislative committee in passing the Basic Science bill and also a new Medical Practice law. Due appreciation of the work of this committee was expressed at the various sessions.

The dispatch with which the business of the House of Delegates was carried out was largely due to the improvement in the manner of handling Association matters. Needless discussion of resolutions proposed by various committees and delegations was reduced to a minimum by reference to a resolutions committee whose recommendations were for the most part promptly adopted by the House of Delegates.

Among the messages brought by our distinguished guests that presented by Dr. Harris of Chicago was from the standpoint of medical economics most interesting. It is safe to state that the great majority of physicians believe in the fundamental right of an individual to choose his own medical adviser even in workman's compensation cases. As the law is operated in our State the employer or insurance company selects the attending surgeon. Dr. Harris informed us that in Chicago at least the employer is bound to pay a reasonable fee to the family doctor although the company has a right to have its own doctor investigate the case. A legal decision has been reached on this point in Illinois. There are arguments, of course, on both sides of the question as to who should choose the attending doctor, but the right of the individual to make the choice seems fundamental. It is to be hoped that the committee on contract practice which is to be continued next year will have a satisfactory remedy for the unjust situation that exists at present in Minnesota.

The entire proceedings of the House of Delegates will appear later in the journal for the benefit of the members who were not able to attend the Duluth meeting. Only the briefest mention can be made here of the business transacted. Provision was made for honorary membership in the Association upon recommendation of the Council and election by the House of Delegates. It was decided to allow A. M. A. delegates traveling expenses and a set amount per diem after 1928. Among the various new committees to be appointed are: One to act in an advisory capacity to confer with the United States Army in matters of medical personnel; one to confer with the Minnesota State Health Association; one to coöperate with the State Department of Health in a study of maternal deaths, and one to be known as a committee on university relations.

Since the establishment of the journal the handling of the finances of the publication has been most cumbersome. In the future the busi-

ness manager of the journal will handle the financial affairs of the journal separately and make quarterly reports to the Association. Delay and duplication of work will thus be avoided.

Next year we will meet in Minneapolis in conjunction with the American Medical Association. The actual meeting will be limited to the convening of the House of Delegates and no scientific papers will be presented. It was felt that the usual program either in conjunction with the A. M. A. meeting or at a different date would not be advisable. It is to be hoped there will be no falling off in the publication of valuable work being done throughout the state because of this arrangement.

The following officers for 1928 were elected:

President, Dr. Charles B. Wright, Minneapolis

First Vice President, Dr. Charles Bolsta, Ortonville

Second Vice President, Dr. A. G. Liedloff, Mankato

Secretary, Dr. E. A. Meyerding, St. Paul

Treasurer, Dr. Earle R. Hare, Minneapolis.

The councillors re-elected were:

Fourth District, Dr. F. A. Dodge, Le Sueur

Sixth District, Dr. W. H. Condit, Minneapolis

Seventh District, Dr. W. W. Will, Bertha

Eighth District, Dr. G. S. Wattam, Warren

Dr. J. C. Litzenberg of Minneapolis was elected A. M. A. delegate with Dr. W. F. Braasch of Rochester as alternate.

Free Clinics

The medical needs of the poor in the larger communities are provided free by municipal or privately supported organizations. Such organizations facilitate the rendering of much charity work by the profession which from a humanitarian standpoint is absolutely necessary. On the other hand we know of no other profession that gives free service to the poor of a community in any way commensurate with our profession. Certain individuals and business concerns, it is true, contribute, often generously, to philanthropic and social agencies devoted to the relief of the poor and this fact should not be lost sight of when we, as it were, pat ourselves on the back.

From time to time organizations dispensing medical aid in an effort to expand their work, educate the public or increase their income, adopt policies which are distinct impositions on the good nature of the medical profession. It behooves the profession to oppose such extensions, which too often lead in the direction of socialized medicine.

Recently the Chicago Medical Society took the stand that they would render free medical services only to individuals who were recipients of any other form of charity. Whether medical charity can be limited in this way remains to be seen.

Committees of the Hennepin and Ramsey County societies have investigated local conditions and the societies in adopting their reports take much the same viewpoint on the questions involved. The Ramsey County members express the opinion that free medical services should be given to the poor only and declared themselves opposed to any part pay plan for a hospital or clinic where physicians contribute their services for nothing.

The stumbling block in the carrying out of any recommendations so far proposed is the fact that each individual case must be accepted or rejected at a free clinic on its own merits. No arbitrary standards are possible. This gives considerable leeway to the social service staff of any free clinic and opportunity for imposing on medical charity. It does seem that in clinics run essentially for dispensing medical service the doctors should have a voice as to who shall be given the charity.

Announcement was recently made that the Ancker hospital in St. Paul was contemplating making a charge for hospital services commensurate with ability to pay. This would be following in the footsteps of the University hospital and the Minneapolis General hospital. It seems quite obvious that such a system can very easily extend the scope of free medical service even with most rigid investigation of the financial status of patients applying for treatment. In actual practice this has been the result, the nominal charge not being sufficient to divert the patient back to a private hospital and physician.

Only further confusion can result from the institution of partial payment of medical expenses in charity clinics. Charity and private practice should stay divorced, in our opinion.

MISCELLANEOUS

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

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For the information of Association members the following sections of the Minnesota Laws Defining and Regulating the Practice of Healing as enacted in 1927 are herewith reproduced:

Section 8. Any person not hereinafter excepted from the provisions of this Act who was lawfully authorized to practice healing, as by this Act defined, in this state on the date this Act takes effect, and who was on that date regularly licensed or registered in the manner then by law provided, shall, upon application as herein provided, receive from the State Board of Examiners in the Basic Sciences a certificate of registration in the Basic Sciences without examination therein; provided, however, that on or before October 1, 1927, every such person shall apply to the secretary of said Board for such certificate or registration, accompanying such application with *sufficient* and *satisfactory evidence that he was,* on the date of the passage of this Act, lawfully authorized to practice healing or regularly licensed or registered according to law in the particular branch or system of healing by him pursued and specifying in said application the branch or system of healing pursued by the applicant, the school from which he graduated, if any, and the date of graduation from said school together with a fee of three dollars. Such certificate of registration shall recite that registration is made solely as a person lawfully authorized to practice healing or licensed or registered according to law on the date this Act takes effect, and that same was issued without examination in the Basic Sciences. Any person entitled to a certificate of registration in the Basic Sciences without examination therein pursuant to the provisions of this section who fails to apply for same in the manner herein provided shall not receive such certificate of registration except upon an application for examination and actual examination in the Basic Sciences as hereinbefore provided; provided, however, said State Board of Examiners in the Basic Sciences may after the first day of October, 1927, in its discretion upon payment to it of a fee of $25.00, issue a certificate of registration in the Basic Sciences without examination to any person who would have been entitled thereto pursuant to the provisions of this section upon applying therefor on or before the first day of October, 1927, and who makes application therefor in the manner herein provided and shows good cause why said application was not made on or before the first day of October, 1927.

Section 10. Every person holding a certificate of registration under this Act shall have it recorded within 30 days after the issuance thereof in the office of the Clerk of the District Court of the county in which he resides, and whenever he shall change his place of residence to another county, he shall again record such certificate in the office of the clerk of the District Court of such county, and the clerk shall, in each case, write or stamp thereon the date of such recording. The clerk of the District Court shall keep in a book provided for such purpose by the county and open to the public inspection a complete list of such certificates of registration in the Basic Sciences recorded by him and his predecessors in office, including the date of the issue of each certificate of registration, the name of the person therein and the date of the recording thereof. For each such recording the clerk of the District Court shall receive from the person named in the certificate of registration a fee of One Dollar. After such recording the certificate of registration shall be conspicuously displayed by the holder thereof in the office or place where he pursues the practice of healing.

Section 13. Every person not hereinafter excepted from the provisions of this act authorized to practice healing in this state shall in the month of January of each year register with the secretary of the particular Board of Examiners which examined and registered or licensed him to practice that branch or system of healing which he pursues; and shall at said time for the purpose of making such registration send to such secretary in writing signed by him, his name, the name of the place and the address at which he is engaged in the practice of healing, and pay to said secretary respectively for the years 1928 and 1929, a fee of $5.00, and thereafter for each year a fee of $2.00. Any person who shall change the address or place at which he practices healing during the year shall forthwith notify such secretary in writing of such change, giving such new address or place. The secretary of each Board of Examiners shall keep a proper register of all such persons and to each person so registering the proper board shall issue a certificate for the current year, signed by the president and secretary and sealed with the seal of such board, setting forth his name, the name of the place and the address at which he is engaged in the practice of healing, and the branch or

system of healing by him pursued. Any person not hereinafter excepted from the provisions of this act lawfully entitled to engage in the practice of healing in this state after the month of January in any year and who shall not be registered as provided in this Section, shall, within thirty days after first so engaging in the practice of healing, register with the proper examining board in the manner herein provided and pay to the secretary of such board the fee above required, and shall receive from such board a certificate as above prescribed for the balance of such year. Every person receiving a certificate as herein provided shall display the same in a conspicuous place in the office or other corresponding place where he pursues the practice of healing. All fees received by the secretary of any examining board for registration required by this section shall be available to and may be used by such board to defray the expenses of keeping proper registers, furnishing the certificates herein provided for, employing an inspector or inspectors for procuring evidence of any violation of the law or laws administered thereby and aiding in the enforcement of such law or laws and for such other expenses as may be necessarily paid or incurred in the exercise of its powers or performance of its duties as provided by law.

Section 17. Any person not hereinbefore excepted from the provisions of this Act who shall after October 1, 1927, practice or attempt to practice healing as in this Act defined in the State of Minnesota without a valid existing certificate of registration in the Basic Sciences issued to him pursuant to the provisions of this Act, shall be guilty of a gross misdemeanor.

Section 18. Any person not hereinbefore excepted from the provisions of this Act who shall practice healing or attempt to practice healing in this state without having recorded his certificate of registration in the Basis Sciences in the manner herein provided, or without having registered with the examining board in the system or branch of healing by him pursued as herein provided, or without displaying his certificate of registration in the Basic Sciences and his certificate of annual registration with the proper board of examiners as herein provided, shall be guilty of a misdemeanor.

The registration with the Board of Medical Examiners will not take place until January, 1928, sometime during which month physicians must register *after* having registered with the Basic Science Board. Physicians should therefore *first* register with the Basic Science Board. In the near future registration forms will be mailed to all Minnesota physicians whose names appear in the last A. M. A. directory. If a physician does not receive such a form in the near future he is not excused from the penalty for not registering. Therefore, if you do not receive this form, apply for a form from Dr. E. T. Bell, Secretary of the Basic Science Board, 110 Anatomy Building, University of Minnesota, Minneapolis. You must apply for the Certificate of Registration on or before Oct. 1, 1927. Within thirty days following the receipt of the Certificate of Registration this must be recorded in the office of the Clerk of District Court of your county.

PRELIMINARY REPORT ON WASSERMANN REACTIONS

C. C. Van Winkle, M.D.
Minneapolis

Not long ago a striking statement was encountered by Dr. Mariette in an analysis of Wassermann reactions among tuberculous patients to the effect that 31 per cent of non-syphilitic tuberculous patients gave a partial or complete fixation. This seemed a higher percentage than was his impression in going over his charts. So we set out to determine the incidence of these reactions among the patients at the Glen Lake Sanatorium.

A very brief review of the literature brought out some conflicting reports. It was Snow and Cooper, in 1916, who reported 31 per cent of partial and complete fixation when using a cholesterinized antigen. These cases were negative when an alcoholic antigen was used. J. S. Ford (1917) reports irregular fixation with cholesterin antigen but in only 5 per cent of such cases.

Lately, considerable work has been done using the Kolmer test, which gives a higher percentage of agreement with clinical findings with fewer false positives or negatives. The Kolmer antigen is a slightly cholesterinized one.

In a paper comparing the results on 5,000 sera when using the Kolmer antigen and an alcoholic human heart antigen, Irvine and Stern (1923) found 3 per cent double reactions with each antigen. But there was a closer clinical agreement with the Kolmer test. We can not tell from their report how many of their 3 per cent doubtful Kolmer tests were cases of tuberculosis. They were not interested in that phase of the question and consequently did not report them. They do note twenty cases of non-syphilitic pulmonary tuberculosis which are negative with the Kolmer test and either positive or doubtful with the alcoholic antigen.

Kilduff, however, in 1924, reported 4 per cent positive reactions among 100 cases of non-syphilitic tuberculous patients when the Kolmer test was used.

Another report, by Ruscher, a German worker, appeared in 1923, a brief abstract of which is all I have seen. He reports one permanent positive Wassermann test among 90 non-syphilitic tubercuious children. This gives a little less than 1 per cent false positives among the age-group designated as "children."

The one definite fact emerging from these varying reports is that there is a certain percentage of tuberculosis cases which give some fixation with a syphilitic antigen which is non-specific, no matter what technic is employed.

Our experience at the Glen Lake Sanatorium confirms this view. Wassermann tests are taken as a routine procedure on all admissions to the Sanatorium. In analyzing the first 2,000 admissions, it was found

that 1,450 had been so tested, most of them with the Kolmer test. Of these, 11.5 per cent (167) had irregular reactions. These irregular reactions include twenty-three cases having positive tests without signs or symptoms of syphilis, four cases with negative tests and positive findings, forty-one cases having an equal number of positive and negative tests, the remaining ninety-nine made up of cases having doubtful and negative reactions, or doubtful and positive reactions. Ten cases had irregular reactions with positive clinical findings.

The tests were made at the City Laboratory and State Board of Health Laboratory, the bulk of them being done at the latter Laboratory with the Kolmer technic.

This analysis raises a number of questions:

1. What type of tuberculous infection gives these reactions? Are these irregular reactions more prevalent in pulmonary or bone tuberculosis? Does the stage or severity of the disease make a difference?

2. What is the age distribution of these reactions? Ruscher, you recall, reports 1 per cent false positive among tuberculous children. We want to find out if age distribution narrows the problem.

3. Pregnancy is known to give irregular tests. What happens in the tuberculous woman who is pregnant?

Further careful tabulation and observation is being started to give facts on some of these points.

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Kilduffe, R. A.: Kolmer complement fixation test for syphilis in tuberbulosis. Am. Jour. Med. Sci., 1924, clxvii, 392.

Ruscher, E.: Wassermann reaction in tuberculosis. Deutsch Med. Wchnschr., 1923, xlix, 278.

Editor's Note: The question arises whether 10 per cent of irregular reactions is peculiar to tuberculosis cases. Our impression is that a 10 per cent leeway should be allowed in the interpretation of Wassermann reports on cases in general.

ARC AND MERCURY VAPOR LAMPS

The carbon arc and quartz mercury arc lamps are generators of ultraviolet energy. The carbon arc lamp delivers about 5 per cent of its total spectral energy in the ultraviolet zone, and the quartz mercury arc lamp delivers about 28 per cent. An erythema dose can be readily obtained with a mercury arc but it requires a considerable exposure in the case of a carbon arc. Some believe that an erythema is necessary, whereas others believe that an erythema is unnecessary, to good clinical results. (Jour. A. M. A. April 2, 1927, p. 1102.)

OBITUARY

Dr. Henry Winfield Brazie

Dr. Henry Winfield Brazie, 84 years old, died Saturday July 2, 1927, at the home of his niece, Mrs. J. E. Painter, in Minneapolis.

Dr. Brazie was born near Ashtabula, Ohio. When he was 16 years old he enlisted in the seventh Michigan infantry and served with it until he was appointed to the United States secret service. He was stationed in Washington when President Lincoln was assassinated.

During the war he took part in the battles of Ball's Bluff, Yorktown, West Point, Fair Oaks, Second Bull Run, Antietam, Gettysburg and Wilderness. He was wounded at Gettysburg and Antietam. After the war he studied at the University of Michigan, and in 1870 was graduated from the Cleveland Homeopathic college hospital.

He practiced first at Ypsilanti, Mich., and later in Elkhart county, Indiana. In 1880 he came to Minneapolis, where he was in active practice until a year ago. In 1884 he was elected president of the Hahnemann Medical Society of Hennepin county, and vice president of the Minnesota State Homeopathic Institute. He also served as medical director of the G. A. R. in Minnesota from 1884 to 1886.

In 1887 he was appointed to the board of commissioners for the examination of state hospitals for the insane, and served in that post for many years. When the homeopathic department of the University of Minnesota Medical College was organized Dr. Brazie was appointed professor of physiology, and later served as dean. At the time of his death he was president of the G. A. R. pension board of Hennepin county, an office which he had held for 20 years.

He is survived by a sister, Mrs. William Woodruff, Mineral Wells, Texas; his niece, Mrs. Painter; a son-in-law, Dr. M. W. H. Bockman, of Minneapolis; and four grandchildren.

Dr. Mary E. Towers

Dr. Mary E. Towers, 70 years old, prominent Minneapolis physician, former member of Asbury hospital staff, and a resident of Minneapolis for 35 years, died at her home Friday night, June 10.

Dr. Towers was a daughter of Thomas Matthews, a veteran of the Mexican war. She was born at Algonac, Mich., in 1857. On completion of her high school course, when she was 15 years old, she took up the teaching profession, teaching in schools at Muskegon, Mich., Lincoln, Neb., and Boulder, Col. In 1882 she came to Minneapolis and taught for several years at Adams school, and was principal of Lyndale school.

She entered the medical school at the University of Minnesota, and graduated in 1899 as president of the class, the first woman ever to achieve that honor.

Aside from her prominence as a physician and as a staff member of Asbury hospital for 10 years, Dr. Towers was known as a charity and welfare worker. For many years she had held membership in several charitable and welfare organizations, taking an active part in their work.

Dr. Towers was first president of the Columbia Study Club. She was a member of the G. A. R. Women's Auxiliary, the Union Labor League, and Morgan Women's Relief Corps, and was one of the two honorary members of the Minneapolis Teachers' Association.

Surviving are her husband, Dr. F. E. Towers, of Minneapolis, and three sisters.

Dr. Gerald Ryan Moloney

Dr. G. R. Moloney, a pioneer physician in his community in active practice for over forty years at Belle Plaine, Minnesota, died Monday, July 18, as a result of injuries received in an automobile accident the evening before.

Gerald Ryan Moloney was in his eightieth year, being born at Carroughmarka, Doon, County Limerick, Ireland, Jan. 7, 1848. He took his preparatory course in the city of Limerick and in the city of Dublin, and completed his medical education in New York City, where he had come in 1872. After receiving his degree from New York University Medical College in 1875 he practised medicine and surgery a brief while in New York and then came to Minnesota, locating in Belle Plaine.

The year after his arrival he married Hannah Kennedy, sister of the late Mgr. Kennedy who was parish priest of Sacred Heart parish for over forty years. In addition to his medical practice, Dr. Moloney also conducted a drug store during his early years. About ten years ago he definitely retired from active practice.

Despite his age Dr. Moloney was remarkably active. Brisk in manner yet always displaying a formal courtesy that became a gentleman of the old school, he was most companionable and a ready associate with the friends of old days and with the newest acquaintances. During these last years fishing was his great hobby.

Dr. Moloney was a member of a number of fraternal organizations in his community, a member of his county, state and national medical associations and at the time of his death was a director of the First National Bank of Belle Plaine.

Surviving Dr. Moloney are his wife, who was injured in the accident causing the doctor's death, and a daughter, Mrs. D. A. Hanlon of Montgomery, Minnesota.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

RED RIVER VALLEY MEDICAL SOCIETY

The spring meeting of the Red River Valley Medical Society and the Ladies' Auxiliary was held at Crookston, May 27, 1927, with the following program.

The morning session held at Sunnyrest Sanatorium included the following:

1. Diagnostic Clinic on Tuberculosis
   Dr. F. W. Wittich, Minneapolis
2. Sanatorium Treatment
   Dr. Jas. K. Anderson, Sunnyrest, Crookston
3. The County Tuberculosis Survey
   Dr. O. E. Locken, Crookston
4. Inspection of Sanatorium.

A complimentary luncheon was served the attending physicians through the courtesy of the Sanatorium Commission.

The afternoon meeting was composed of the following papers:

1. Acute Pancreatitis
   Dr. J. L. Delmore, Roseau
2. Problems in the Treatment of Renal Lithiasis
   Dr. W. F. Braasch, Rochester
3. Some personal observations in General Surgery
   Dr. J. J. Stratte, Hallock
4. Newer phases of Chronic Cholecystitis
   Dr. M. O. Oppegaard, Crookston.

More than fifty guests were entertained at a banquet held at the Hotel Crookston in the evening.

Following the banquet the guests were addressed by Dr. W. F. Braasch, president of the State Medical Association, on "The State Association," and by Dr. A. C. Dean of Crookston on "The District Society and Legislation." Dr. W. F. Braasch and Dr. F. W. Wittich were elected honorary members of the society.

SCOTT-CARVER COUNTY MEDICAL SOCIETY

A regular meeting of the Scott-Carver County Medical Society was held at New Prague, Minn., April 21, 1927, Dr. F. W. Maertz, president of the society, presiding.

Dr. O. W. Yorg, Minneapolis, read a paper on "Acute Gastric and Duodenal Ulcer." Dr. S. Marx White gave an instructive address on "Tachycardia."

The New Prague Community Hospital Association entertained the society at a seven o'clock dinner at the Hotel Bros.

By invitation of Dr. James McKeon the Society held its annual meeting at Montgomery, Minnesota, June 2, 1927. The members were entertained at a banquet at the Hotel Alba.

Officers for the year 1928 were elected as follows: President, Dr. W. F. Maertz, New Prague; vice president, Dr. E. J. Eklund, Norwood; secretary-treasurer, Dr. H. W. Reiter, Shakopee. Dr. B. H. Simon and Dr. H. M. Juergens were elected as censors. Dr. F. J. von Bohland, Belle Plaine, was elected delegate to the

state meeting with Dr. H. A. Schneider, Jordan, as alternate.

Dr. F. Westermann gave a report on the Publicity Chairmen's Conference held in March at St. Paul.

Dr. P. F. Donohue, St. Paul, discussed the subject "Renal Calculi," illustrated with lantern slides and *x*-ray pictures.

STEARNS-BENTON COUNTY MEDICAL SOCIETY

A report of the meeting of the Stearns-Benton County Medical Society held at Richmond, May 25, 1927, showed an attendance of twenty-six members.

The program included the following papers:

1. Presentation of Cases of Duodenal Ulcer
   Dr. R. N. Jones, Richmond, Minnesota
   Discussion: Dr. C. B. Lewis, St. Cloud, Minnesota
2. Senile Cataract
   Dr. H. E. McKibben, St. Cloud, Minnesota
   Discussion: Dr. T. N. Fleming and Dr. W. L. Freeman, St. Cloud, Minnesota
3. Massive Lung Collapse
   Dr. C. S. Sutton, St. Cloud, Minnesota
   Discussion: Dr. R. H. Sweetman, Sauk Centre, Minnesota.
4. Surgical Problems
   Dr. A. A. Meyer, Melrose, Minnesota.

A rising tribute to Dr. H. A. Pinault, St. Joseph, Minnesota, whose death occurred May 21, 1927, was given.

Twenty members of the Stearns-Benton County Medical Society met at Belgrade, Minnesota as the guests of Dr. F. S. Richardson June 22, 1927, at 6:00 p. m.

Program:

New Methods on Posterior Occiput
Dr. William Friesleben, Sauk Rapids, Minnesota.
Discussion: Dr. R. H. Sweetman, Sauk Centre, Minnesota.

Surgical Problems
Dr. A. A. Meyer, Melrose, Minnesota
Discussion: Dr. C. B. Lewis, St. Cloud, Minnesota
Discussion: Dr. Chas. S. Sutton, St. Cloud, Minnesota

Pre-operative Sterilization of Skin
Dr. F. S. Richardson, Belgrade, Minnesota
Discussion: Dr. R. N. Jones, Richmond, Minnesota

Value of Ophthalmoscope in General Practice
Dr. T. N. Fleming, St. Cloud, Minnesota
Discussion: Dr. Julius Buscher, Albany, Minnesota

Chronic Constipation
Dr. H. B. Clark, St. Cloud, Minnesota
Discussion: Dr. C. F. Brigham, St. Cloud, Minnesota
Discussion: Dr. O. A. Groebner, Cold Spring, Minnesota.

A committee composed of Dr. Fleming, Dr. Lewis, and Dr. Brigham was appointed to consider a permanent memorial for the Stearns-Benton County Medical Society.

WABASHA COUNTY MEDICAL SOCIETY

The fifty-ninth annual session of the Wabasha County Medical Society was held at Lake City, Thursday, July 7, 1927.

The following program was presented:

President's Address—"Our Society"
Dr. J. S. Collins, Wabasha

"Perinephritic Abscess," with Illustrative Case
Dr. Wm. P. Herbst, Minneapolis

"Bovine Tuberculosis and Its Relation to Man"
Dr. A. S. Anderson, Buena Vista Sanatorium, Wabasha

"The Cults and You"—Lantern Slide Illustrations
Dr. Wm. A. O'Brien, Pathologist, University of Minnesota Hospitals.

Report of the Discussion on Immunization against Scarlet Fever and Diphtheria, at the State Sanitary Conference, June 15
Dr. E. H. Bayley, Health Officer, Lake City.

Two new members were admitted: Dr. Arnold S. Anderson of Buena Vista Sanatorium, Wabasha, by transfer, and Dr. William R. R. Loney of Plainview, by primary application. Dr. J. S. Tenney of Alma, Wisconsin, was made an honorary member.

The following officers were elected for the coming year: President, Dr. W. J. Cochrane, Lake City; vice president, Dr. A. S. Anderson, Wabasha; secretary-treasurer, Dr. W. F. Wilson, Lake City; delegate to State Association (1928), Dr. D. S. Fleischhauer, Wabasha; alternate, Dr. J. S. Collins, Wabasha; censor for three years, Dr. J. A. Slocumb, Plainview.

It was voted to hold the next annual meeting at Plainview.

In a few well chosen remarks, the presiding officer, Dr. J. S. Collins of Wabasha, thanked all those who took part in the entertainment, and especially Dr. Wm. P. Herbst and Dr. Wm. A. O'Brien of Minneapolis, for their interesting and instructive addresses.

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Drs. Bolsta, Karn, O'Donnell and Shelver of Ortonville entertained the members of the West Central Minnesota Medical Society and their ladies at an outing held at that place, June 19, 1927. Dr. Herman Johnson of Dawson was a guest on that occasion.

The next meeting will be held at Morris, October 12, 1927. This will be the annual meeting and officers for the coming year will be elected at that time.

"Again, as blood was always regarded as the fountain of life, to drink the blood of a warrior, or still better to eat his raw heart, was to transfer his bravery therewith to the consumer. But as human hearts were not often available, the heart of a bold beast, as the lion, was regarded as not much less efficacious; . . . the physicians who dissected Cyril cut off and ate the holy episcopal liver."—Allbutt, *Greek Medicine in Rome,* 1921, p. 53.

OF GENERAL INTEREST

Dr. H. G. Franzen of Minneapolis returned in July from a two months' stay in Europe.

Dr. I. L. Harshbarger, Rochester, was married to Miss Gertrude Ackerman at Mankato on Thursday, June 30.

Dr. C. A. Hallberg announces the removal of his offices to 610 Yeates Building, 823 Nicollet Avenue, Minneapolis.

Dr. Emmett V. Kenefick, St. Paul, has opened offices in the Lowry Building and will limit his practice to internal medicine.

Dr. Henry Reiniets of Rochester was married June 15 at Sheldon, Iowa, to Miss Martha Ann Kruse, of Woodstock, Minnesota.

Dr. and Mrs. Walter E. Camp, Minneapolis, are the parents of a daughter, Lucille Kinney Camp, born Monday, June 13, 1927.

Dr. G. H. Baxter has returned to Rochester from his home in California. He was married on July 7 to Miss Ruth Coleman at Berkeley.

Dr. C. F. Kemper announces the removal of his office to 930 Metropolitan Building, Denver. His practice is limited to internal medicine.

Dr. Philip D. Woodbridge, of Portland, Connecticut, has come to the Mayo Clinic, Rochester, as first assistant in the Section on Anesthesia.

Dr. and Mrs. Emil Geist, St. Paul, and their three children sailed June 18 from New York for Europe, where they will spend the summer.

Dr. Gerald P. Dunne has announced the opening of offices at 619 Hamm Building, Saint Paul, for the practice of obstetrics and gynecology.

Dr. Seymour R. Lee will remain at the Ancker Hospital, St. Paul, as resident physician and Dr. Gordon W. Strate as resident the ensuing year.

Dr. R. B. McKnight has opened offices at 217-218 Professional Building, Charlotte, North Carolina, for the practice of surgery and surgical diagnosis.

Dr. Magni Davidson, who has been the resident surgeon at Ancker Hospital, St. Paul, has been appointed assistant superintendent of the hospital.

Dr. J. W. Thompson of Rochester was married June 29 to Miss Marjorie Hyslop at Fulda, Minnesota. His brother, Dr. G. J. Thompson, acted as best man.

Dr. T. M. Jones has been granted leave of absence by the Mayo Foundation and goes today to Montreal to be with the Hudson Bay Company for a time.

Dr. Frank C. Goodwin is doing additional hospital work at the Gillette Hospital, Phalen Park, St. Paul, after completing his interneship at Ancker Hospital.

Dr. D. R. Heetderks of Rochester will locate in the near future in Grand Rapids, Michigan, where he will limit his practice to otolaryngology and bronchoscopy.

Dr. E. T. Brading has been granted a year's leave of absence from the Mayo Foundation. He will spend the summer in New York State as physician in two camps.

Dr. T. L. Harschbarger, who has been a Fellow in Surgery at the Mayo Clinic for three years, is now associated with Dr. D. C. Patterson in Bridgeport, Connecticut.

Dr. W. H. Bueerman has announced the opening of offices at Suite 1015 Corbett Building, Portland, Oregon, for the practice of surgical diagnosis and general surgery.

Dr. G. C. Anderson has left Rochester, where he has been associated with the Mayo Clinic, and has gone to New Orleans, where he plans to practice neurologic surgery.

Dr. and Mrs. George T. Ayres and daughter, Florence, of Ely, Minnesota, are spending the summer in Europe. Dr. Ayres is a member of the Shipman Hospital staff at Ely.

Dr. Magee, who has been at the Johnstone-Wickett Clinic at Anaheim, California, for two and a half years, has returned to Rochester to resume his fellowship in medicine in the Mayo Foundation.

The marriage of Miss Mary Celestine Hoy of Minneapolis to Dr. Edward A. Regnier, also of Minneapolis, was solemnized Wednesday, June 22. Dr. and Mrs. Regnier will reside in Minneapolis.

Dr. J. R. Aurelius, who has been a Fellow in Radiology at the Mayo Clinic, Rochester, for the last two years, has gone to St. Paul, where he will be associated with the Earl Clinic, 1012 Lowry Building.

Drs. M. F. Fellows, H. F. Flanagan and R. J. Hanna are taking additional hospital work at the Buffalo City Hospital, New York, following completion of their interneship at Ancker Hospital, St. Paul.

Dr. James L. Benepe of St. Paul has completed his interneship at Ancker Hospital and is now associated with Dr. H. E. Binger at 826 Lowry Building in the practice of eye, ear, nose and throat specialties.

Announcement has been received of the marriage of Dr. Joseph Graham Mayo and Miss Ruth Rakowsky of Joplin, Missouri, which occurred June 11 at Joplin. Dr. and Mrs. Mayo will make their home at Rochester, Minnesota.

At Brainerd, Minnesota, June 15th, Dr. E. S. Murphy and Miss Edith Bartsch were married. They will be at home in Glendive, Montana, after a wedding trip in the east. Dr. Murphy is on the staff of the N. P. B. A. Hospital in that city.

Among the Minnesota physicians who are making the Interstate Post Graduate Assembly tour of European clinics this summer are Drs. E. I. Lindgren, Duluth; C. L. Larsen, St. Paul; J. G. Ericson, Minneapolis, and H. J. Thornby, Moorhead.

Mrs. Edward Holmes Payte of Saint Paul has announced the marriage of her daughter, Constance, to Dr. Frederick W. Van Valkenburg, son of Dr. and Mrs. B. F. Van Valkenburg of Long Prairie, Minnesota, which took place Tuesday, June 21, 1927.

Dr. Herbert Chamberlain of New York, who will succeed Dr. Smiley Blanton as director of the Minneapolis child guidance clinic, arrived in Minneapolis July 13. Dr. Blanton is leaving Minneapolis to take up research work in psychiatry at Vassar College.

Dr. W. P. Sherill, who has been with Dr. H. F. Helmholz, Rochester, for the last year, has left with

his family for San Diego, where he will enter the practice of pediatrics, as an associate of Drs. Sharp and Woods. His address will be 420 Walnut Street.

Announcement has been made that a new twenty story medical and surgical building is to be erected in Minneapolis at Third avenue south and Tenth street. The main part of the building is to be twelve stories high, with the eight upper floors constructed in tower form. Work is to begin on the structure this fall.

The election of officers of the Medical Alumni Association of the University of Minnesota held at their annual luncheon at Duluth in July resulted in the following: President, Dr. O. S. Wyatt, Minneapolis; vice president, Dr. Martin C. Bergheim, Hawley, Minnesota; secretary-treasurer, Dr. Donald Daniel, Minneapolis.

Drs. G. E. Sherwood and Clarence Jacobson of Kimball, Minnesota, entertained members of the Stearns-Benton County Medical Society with a picnic at Dr. Sherwood's summer resort at Pearl Lake, July 27. The invitation included the doctors and their families. As a novel part of the program the guests visited Dr. Sherwood's famous Guernsey dairy.

Dr. William H. Feldman has come to the Mayo Clinic to take Dr. Hardenbergh's place with Dr. Mann at the Institute of Experimental Medicine. Dr. Feldman took the degrees of V.D.M. and M.S. from the Colorado State Agricultural College. He has been on the faculty in the Department of Veterinary Pathology at this college until coming to the Clinic.

Dr. H. Longstreet Taylor, St. Paul, with Mrs. Taylor and their two children sailed in June for London. Dr. Taylor addressed the British Sanatorium Association and the National Tuberculosis Association of England at their annual meetings in London in July. Before returning home Dr. Taylor and his family will visit points of interest in England, France and Holland.

Dr. C. J. Rohwer has been awarded a fellowship with the National Committee for Mental Hygiene, and has left the Manhattan State Hospital, Ward's Island, New York, to go to Chicago to work under the direction of Dr. Herman Adler at the Institute for Juvenile Research, 907 South Lincoln Street. Dr. Rohwer was married May 12 to Miss Cornette Fisk of Spokane, Washington. The wedding took place in New York City.

Dr. F. W. Schlutz of Minneapolis sailed June 25 for South America where he has been officially invited by the Argentine Medical Society and the Argentine Pediatric Society to give several lectures before their respective groups. Dr. Schlutz will also lecture at the University of Rio de Janeiro, Montevideo, Buenos Aires, and on his return home by way of the Pacific at Lima. Dr. Schlutz will return to Minneapolis about September first.

Dr. Herbert Lampson of Duluth died recently following an operation for appendicitis. His activities as health officer of St. Louis county and in tuberculosis work caused him to be widely known throughout the Northwest. He was a member of the executive committee of the Minnesota Public Health Association and was recently elected president of the Minnesota State Sanitation Conference. Dr. Lampson is survived by his widow, two sons and a daughter.

Mr. and Mrs. George Pierce Adams of Blackstone, Virginia, have announced the marriage of their daughter, Martha Lee, to Dr. Holcombe H. Hurt on June 15, 1927. Dr. and Mrs. Hurt will make their home in South Boston, Virginia, where Dr. Hurt is in practice.

Dr. N. O. Pearce and members of a committee of investigation appointed from the Hennepin County Medical Society recently made a survey of the situation existing in the matter of free patients cared for in the general hospitals in Minneapolis and have turned over the report covering 200 patients to the Board of Public Welfare of Minneapolis. The report is now on file in the offices of the Hennepin County Medical Society and is open to anyone interested in reading the findings of the committee.

At the Commencement at the University of Minnesota in June the following Fellows of the Mayo Foundation received advanced degrees: Drs. G. C. Anderson, P. G. Flothow, N. C. Ochsenhirt, and W. W. Sager will receive the degree of Master of Science in Surgery; Drs. H. V. Dobson and L. E. Priekman the degree of Master of Science in Medicine; Dr. H. D. Caylor the degree of Master of Science in Pathology, and Dr. Heetderks the degree of Master of Science in Otolaryngology. Miss Blanche Peterson will receive the degree of Master of Arts for work done in Sociology in the Mayo Foundation.

An informal ceremony in connection with the laying of the cornerstone of the new Mayo Clinic building was held Wednesday, June 22, 1927. Remarks were made by Dr. Charles H. Mayo and Dr. H. S. Plummer.

The following articles were placed in the cornerstone: a copy of "Sketch of the History of the Mayo Clinic and the Mayo Foundation," a copy of "Physicians of the Mayo Clinic and Mayo Foundation," copies of the Clinic Bulletin, and of the Surgical Bulletin, lists of the professional and non-professional personnel of the Clinic, one of each of the coins now in use in this country, lists of the county and city officials, a report of the Rochester State Hospital, the combined Surgical Reports of the Mayo Clinic and St.

A cash prize of $250.00 is offered by the Minnesota Society of Internal Medicine to any regular practicing physician in the State of Minnesota for the best thesis on some subject related to clinical internal medicine, or to research in the medical sciences related to internal medicine.

The purpose of this prize is to stimulate the research spirit in practitioners of medicine, and therefore is to be awarded only to physicians in active practice of clinical medicine (not limited to internists).

Physicians in the employ of the United States Army, Navy, or Public Health Services, whose legal residence is in Minnesota, are eligible.

The prize will not be awarded to any member of this Society.

All theses must be submitted before Dec. 31, 1927. Candidates should notify the secretary, Dr. E. L. Gardner, 610 Yeates Building, Minneapolis, Minnesota.

Mary's Hospital, copies of the Rochester Post-Bulletin for June 22, 1927, and other copies of the same publication containing accounts of the Lindbergh and the Chamberlain-Levine flights.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of May 11, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 11, 1927, at 8 o'clock. Dinner was served at 7 o'clock.

The meeting was called to order by the Vice-President, Dr. John E. Hynes. There were 29 members present.

Minutes of the April meeting were read and approved.

The scientific program was as follows:

Dr. C. F. Nootnagel (Minneapolis) read a paper entitled "Extra-Gastric Closure of the Pylorus."

Starting out with the well-established fact that suspension of function of any organ irritated or inflamed will enhance its recovery—for example, putting an inflamed knee-joint at rest enhances its recovery—the same holds good for all other inflamed or irritated parts of the body. Therefore, when we have an ulcer of the duodenum or of the pyloric end of the stomach, a suspension of function of this part of the alimentary tract would be an ideal treatment for its healing. In order to attain this suspension of function the present-day treatment has been a gastrectomy of the pyloric end of the stomach associated with a gastroenterostomy. This procedure is attended by a varying operative mortality of a rather high degree. In order to avoid some of the risks of a gastrectomy, I cast about for some other means to attain the same result. Dogs were chosen for the investigation of extra-gastric closure of the pylorus, and simultaneously some of the conclusions of Alvarez on peristalsis and reverse peristalsis were to be utilized by administering 2 drams of metallic Hg after each anesthesia in order to lessen the tendency to post-operative vomiting (reverse peristalsis). Alvarez (p. 18) has shown the characteristic of smooth muscle in hollow organs is its responsiveness to tension. Most of the motor activities of the stomach and bowel are brought about and regulated largely by the internal pressure due to the presence of food, gas or other contents. Cannon (p. 187) has shown that the rhythmic segmentation in the small intestine is due simply to the fact that those muscle fibres which are stretched tend to contract. Their contraction increases the pressure in neighboring segments and so the process goes on. As Cannon points out, these reactions to stretching are purely local and are not brought about by nervous reflexes. Alvarez (p. 37) points out that in the gastrointestinal tract there is a gradient of rhythmicity and (p. 41) a gradient of propulsive force, and (p. 53) a gradient of irritablity extending from the stomach to the rectum. Therefore the Hg was administered to start the contractions in the alimentary tract in the right direction after anesthesia in the hope that contractions started properly would continue thus and avoid vomiting. Alvarez (p. 120) points out that vomiting can sometimes be stopped by giving solid food which may act perhaps by raising the tone of the stomach and restoring the downward gradient. The following investigation will show how this procedure worked in dogs.

The operative procedure to close the pylorus wholly or partially was performed in three different methods:

1. The pyloric muscle, one-half inch wide, was raised anteriorly from the submucosa beginning at the gastrohepatic omentum and ending at the gastrocolic omentum, where it was cut across, an opening was made through the gastrocolic omentum, the dissected pyloric muscle was pushed through this opening and sutured to the posterior gastric wall on top of the peritoneum. This mancuver necessitated the folding of the anterior gastric wall upon itself.

2. A strip of peritoneum and pyloric muscle, an inch wide, was raised in the same manner as the first, an opening made through the gastrocolic omentum, the posterior gastric wall was incised down to the submucosa, the edges of the incised peritoneum and pyloric muscle were spread apart and the anterior strip—after folding the anterior gastric wall upon itself—was securely sutured, muscle to muscle and peritoneum to peritoneum.

3. The pylorus was telescoped into the stomach and securely sutured by three rows of No. 1 twenty-day chromic catgut, taking good bites through peritoneum and muscle.

Results: Five dogs were anesthetized for thirty minutes and 2 drams of Hg administered. No emesis followed in any of them.

February 20, 1926. No. I. Pyloric closure by first procedure, posterior gastroenterostomy, administration of 2 drams Hg. No emesis.

February 26, 1926. No. II. Died from careless anesthesia before operation.

March 3, 1926. No. III. Pyloric closure by first procedure; 2 drams Hg. No. emesis.

March 8, 1926. No. IV. Pyloric closure by second procedure; 2 drams Hg. No emesis.

March 10, 1926. No. V. Pyloric closure by second procedure; 2 drams Hg. No emesis.

May 4, 1926. No. VI. Pyloric closure by second procedure, with the addition of suturing the edges of the anterior gastric incision together; administration of 2 drams Hg. No emesis.

May 11, 1926. No. VII. Pyloric closure by third procedure; 2 drams Hg. No emesis. The wound became infected and the dog died on the 8th day. Postmortem revealed generalized peritonitis.

June 1, 1926. No. VIII. Pylorus closed by third procedure; 2 drams Hg. No emesis. Eventration 7th day; death 8th day.

June 12, 1926. No. IX. Pylorus closed by third procedure; 2 drams Hg. No emesis. Dog died the 7th day without showing any peritonitis, wound healed.

Nos. VII, VIII and IX all showed beginning gangrene in the pylorus.

March 12, 1926. Nos. I and III *x*-rayed an hour after a barium meal; stomach empty.

March 22, 1926. No. IV. *X*-rayed half an hour after barium meal; closure good, 70 per cent empty.

March 22, 1926. No. V. *X*-rayed half an hour after barium meal; closure good, 30 per cent empty.

May 15, 1926. No. VI. *X*-rayed half an hour after barium meal; closure good, 50 per cent empty.

April 9, 1926. No. I. Pylorectomy; pylorus partially closed; 2 drams Hg. No emesis.

April 12, 1926. No. III. Pylorectomy, poor closure; 2 drams Hg. No emesis.

April 21, 1926. No. IV. Pylorectomy, good closure; 2 drams Hg. No emesis.

April 27, 1926. No. V. Pylorectomy, good closure; 2 drams Hg. No emesis.

June 10, 1926. No. VI. Pylorectomy, good closure; 2 drams Hg. No emesis.

All external wounds were closed by subcuticular suture and smeared over with several applications of collodion. None of the dogs licked their wounds open except No. VIII, and in this we were not certain what caused the fatal result.

I have operated on one patient for duodenal ulcer by the second procedure, with a good result.

History: Man, 48 years old, family history negative; past history negative; occupation flour-bolter. During the night of November 1, 1926, he was seized with incessant vomiting after indulging in a generous midnight meal of chow mein. I saw him November 2, 1926, still vomiting, and this continued with slight variations to December 15, 1926, when he suffered a severe gastric hemorrhage. He was sent to the hospital and transfused a number of times with great benefit. December 29 we considered an *x*-ray safe and found him suffering from a duodenal ulcer. On February 4, 1927, preceded by a transfusion, I operated upon him by the second procedure and he made a splendid and uneventful recovery. He resumed his occupation April 25, 1927.

The ulcer was situated about two and one-half inches below the pylorus facing the gallbladder. There were many adhesions extending from the duodenum to the gallbladder and the liver.

April 2, 1927, *x*-rays were made, showing good occlusion of the pylorus, although some barium could be forced through the pylorus by kneading the stomach vigorously.

Summary: Five dogs subjected to fifteen anesthesias, each time being given Hg 2 drams, without emesis. Three additional dogs were anesthetized and operated and Hg 2 drams given without emesis. The first five dogs were each operated on twice without a single death. The additional three dogs were subjected to but one time of operation and all died, one from peritonitis, one from eventration, and the other from beginning gangrene of the pyloric portion of the stomach, and I feel that the first two would eventually have died of gangrene of the pyloric portion of the stomach if no intercurrent trouble had killed them. The specimens removed all showed beginning gangrene. The best closure was in No. VI as evidenced by the specimen. In this case the edges of the anterior incision were brought together and sutured, throwing the underlying mucosa and submucosa into folds strengthening the occlusion.†

DISCUSSION

Dr. A. Schwyzer (St. Paul): This just shows again that there are several roads that lead to Rome. In closing the pylorus I have used three different methods. By putting a double forty-day chromic catgut around the pylorus in some cases we have sufficient effect, where we had to be in a hurry, but were anxious to protect a bleeding or perforating duodenal ulcer. For many years we have closed the plyorus in every case of bleeding or perforating duodenal ulcer, where the ulcer could not be excised. Catgut, of course, is only of very temporary protection, and was used a few times after suture of perforated ulcers. Then we have taken fascia, about half an inch wide, from the edge of the rectus sheath, thrown it around the pyloric portion of the stomach, and fastened the ends together with two or three linen stitches. In two cases we could control things afterwards. In one case there was nothing to be found any more; the fascia was absorbed. In another case where I had done this, I had to operate again four or five years later for a tuberculous appendicitis and peritonitis. We pulled the stomach into view and saw a very pretty picture. The fascia had become round and smooth and looked like mother-of-pearl. There were no adhesions to the surroundings.

In my last cases I have used the round ligament of the liver, which seemed an improvement. It is freed from its attachment to the navel, thrown around the pylorus and fastened with linen or silk sutures. We thus have a living structure, which ought to guard against absorption.

Dr. Nootnagel's procedure attacks the pylorus itself, as von Eiselberg does in the radical division of the pylorus. Where a permanent impermeability is attempted, the more extensive procedures will give greater assurance.

Dr. H. A. Douman (Minneapolis): I would like to know more about the mercury.

Dr. Nootnagel (in closing): I read in a book about 100 years old that they gave mercury for intestinal obstruction. Evidently they did not know much about the pathology of intestinal obstruction, but some of the cases got well. And after reading Alvarez's book, I decided that if you put anything in the intestine that is heavy you start peristaltic movements. I put it in with a stomach tube. It will start the gradient of rhythmicity in the stomach and it will go on down. I was under the impression that if you could start that right it would keep on. I don't know how right or wrong it is, but none of these dogs vomited; some retch after the stomach tube is put in and taken out,

†Bibliography:
Walter C. Alvarez: The Mechanics of the Digestive Tract.
W. B. Cannon: The Mechanical Factors of Digestion.

but no mercury came up. We had 18 in which we gave mercury and not one vomited.

I operated on a woman the other day and I feel sure that we could have saved her if we had given her mercury in time. She died of post-operative ileus.

(How much do you give?)

They gave patients up to 1 oz. in weight in that book I read. I was just casting about to see if I could find something to avert vomiting in operations on the stomach.

Dr. A. R. Hall (St. Paul) reported a case of Diffuse Primary Thrombosis of the Vessels of the Lung:

The case history which I wish to present is that of a man who, at the time of his death on March 16, 1927, was 73 years of age. He was born in Scotland and was by occupation a building contractor.

There was nothing of significance in his family history. As a child he had had measles. At the age of 23 he was said to have had pleurisy. When 27 years old he sustained a fracture of the right leg, and in 1906 he had an operation for an inguinal hernia. During the past ten years he had, on several occasions, a mild bronchitis which lasted a few days only. In December, 1925, he had a respiratory tract infection which began acutely with a chill. His temperature in this illness ranged from 100° to 102°, pulse from 80 to 95, and leucocytes 12,600. There was a mucopurulent expectoration but no blood. The chest showed moist râles scattered throughout, but no demonstrable consolidation. He recovered from this attack in about two weeks.

He was accustomed to use considerable tobacco, and although he did not use alcohol regularly, he had, up to ten years ago, occasionally taken alcoholic beverages to excess.

Since the early fall of 1926 he had noticed some shortness of breath on exertion and had had a slight cough, but no expectoration. About November, 1926, he began to notice some slight swelling of the ankles. There was a gradual increase of the dyspnea, and of the edema of the ankles.

When examined in the early part of February, 1927, he complained of shortness of breath on exertion, a sense of tightness in his chest, and a cough, but still very little expectoration. He said he felt most comfortable when sitting in a chair, but could sleep when lying flat in bed. He was most comfortable when lying upon his face. (This had not previously been his customary ways of sleeping.)

He was a strongly built, muscular man. There was moderate edema of the legs and slight cyanosis of the lips and fingers. He had a large chest which was deep in its antero-posterior diameter. Although he was complaining of dyspnea, the respirations were only about 20 to the minute unless he exerted himself, as in removing his clothing for examination. The respiratory excursion was limited. Percussion note was somewhat hyper-resonant. Breath sounds were heard normally throughout the chest with no accompanying râles. Pulse rate was 82 per minute and regular. The radical arteries were palpable but not decidedly sclerosed. The cardiac impulse could be felt inside the nipple line and was not unusually strong or diffuse. Cardiac dullness extended rather widely, both to the right and left, and on percussion gave a total dullness of 14 cm. The heart sounds were heard both at the apex and base. There was some accentuation of the pulmonary second sound. There was a soft, short systolic murmur at the base not transmitted to any great distance in any direction. His liver could be palpated one finger's breadth below the costal border, but was not tender. Otherwise there was nothing of note in the physical examination.

He remained in much the same condition until he was sent to the hospital on March 14, 1927. The edema had increased slightly. A moderate cyanosis remained and he continued to complain of a sense of oppression in the chest, and of shortness of breath. It was not thought that he was in any immediate danger. However, after being in the hospital 32 hours he rang for the nurse, complained of great oppression in the upper chest, and in a few minutes was dead. There had been no fever, his pulse usually ran between 80 and 95, his respiration from 18 to 24. His chest was practically always free from any abnormal sounds, but occasionally during his last illness there had been a few scattered moist sounds, never any dry râles. Although the edema of the legs had increased, it was never very marked, and the same was true of the cyanosis. His blood pressure had been recorded in 1921 as 140 systolic and 80 diastolic. In November, 1926, it was 130 systolic and 80 diastolic. In February, 1927, it was systolic 130 and diastolic 75. No electrocardiograms were taken. His urine was normal in amount and specific gravity, and had shown nothing abnormal except that since February there had been a trace of albumin. In 1921 there had been *x*-ray plates of his chest taken. In these the heart did not show any definite enlargement and there was nothing of note in the lung shadows, but there were some enlarged glands about the lung hilus on either side. He was thought to have a mild emphysema and a degenerated heart muscle caused probably by sclerosed coronary vessels.

An autopsy was done by Dr. Warwick about nine hours after death. It was found that the heart was very definitely enlarged (weight 710 grams) and while both sides were hypertrophied and dilated, this was definitely more marked in the right heart than in the left heart. At the root of the pulmonary artery, just about 3 cms. above the attachment of the valve leaflet, there was a grayish red thrombus, which was firmly attached to the vessel wall and which occupied two-thirds of the space of the lumen. Superimposed on this old gray thrombus was a recent, soft, red thrombus which entirely filled the remaining lumen of the vessel and caused complete occlusion. These thrombi, both the older and the recent, extended down to the pulmonary artery where it entered the lung on either side and the fresh thrombus completely filled the lumen of the vessel at the point of bifurcation. This

thrombus did not show definite organization except near the point of its attachment. It was very firmly adherent to the intima of the pulmonary artery over the entire side where it was located. When separated, it left a slightly roughened reddish surface. It would seem that this gray thrombus had existed at least for some days. There were no obvious changes in the walls of these arteries. The coronaries appeared to be entirely normal and the root of the aorta showed slightly raised, yellowish plaques.

The right lung weighed 730 grams and the left lung 640 grams. Both were dark in color, probably from black pigment. The edges of the lobes showed moderate emphysema. Gross sections showed no areas of consolidation but simply a dry, fluffy parenchyma in which there was marked deposit of black pigment. Practically all of the branches of the pulmonary artery were occluded by thrombi. In many instances these thrombi were attached to the vessel walls, which appeared thickened throughout. Many of the smaller branches, out near the periphery, showed a thickening which made them resemble much larger vessels. On microscopic examination the pulmonary artery in all of its branches throughout the lungs showed an infiltration with lymphocytes and occasional pus cells throughout the wall. Practically all of these vessels were occluded by thrombi which were attached to the wall at one of several points, and which showed in some instances a beginning regeneration. The walls of the pulmonary artery just above the pulmonary leaflets showed the same cellular organizations and there was a beginning organization of the attached thrombi.

The spleen weighed 250 grams; capsule was gray in color and covered by numerous white nodules, in which there were deposits of calcium salts, and which evidently represented an old perisplenitis.

The liver weighed 2,540 grams, was pale in color, with prominent red mottlings, giving the nutmeg appearance of chronic, passive congestion.

The kidneys each weighed 180 grams; capsules stripped easily, leaving smooth, shiny surfaces. On the left side there was a depressed scar which gave a puckered appearance. Gross sections showed cortices to be slightly thin with markings distinct.

There were enlarged lymph nodes at the bifurcation of the trachea, dark in color, homogeneous in consistency and showing no evidence of either calcification or caseation.

The aorta showed throughout its entire length numerous slightly raised yellowish patches. These had no calcification or ulcerations.

There was nothing else of note in the general autopsy findings except that this tendency to thrombosis of the arteries was not present in any of the viscera except the lungs.

We had, then, a diffuse thrombosis of the arteries of the lungs and with its changes in the vessel walls with no similar changes of the vessels of any of the other viscera, and apparently due to the increased resistance of the blood current in the lesser circulation there was produced an hypertrophy and dilatation of the right heart, with symptoms of failure of the right heart: dyspnea, edema and cyanosis.

This is the first opportunity I have had to see such a case but a number of cases have been written up by different authors. Eppinger, in 1920, reported in detail five cases that had come under his observation, and he collected fourteen more from the literature. Gehrt, in 1923, reported seven cases in 660 autopsies at the Children's Hospital in Berlin. Some of these were in quite young children. Two of his cases had had grippe and five had had measles. All had had a more or less protracted pneumonia. In some of his cases bacteria were found in the thrombi and vessel walls. In one report a reference is made to a case reported by Flexner and Welsh, in which the influenza bacillus was found in the thrombi (I have not seen the original report of this case). Lang gives the history of a patient in whom the symptoms began shortly after an attack of typhus. In most of the cases reported there has been much more edema and cyanosis than in our case. It is probable that had this case not been carried off suddenly by the large thrombus in the pulmonary artery he too would have progressed to severe symptoms of heart failure.

Various diagnoses have been made in these cases during life, but rarely the right one. But, when two or three cases have come under the observation of the same man a correct diagnosis has frequently been made and it has been made through the demonstration of an enlarged right heart and the failure to find any of the usual reasons for this right heart enlargement, such as mitral disease, emphysema, fibroid lungs, or congenital heart. In many of the reported cases mention is made of the dilatation of the pulmonary arteries at the root of the heart and of a corresponding narrowing of the pulmonary veins. (This was not noted in our case.) Mobitz, in describing the *x*-ray findings, lays stress on the clear-cut second bulge on the left side of the heart shadow. This, he thinks, should suggest a widening of the pulmonary artery.

As to the cause of the thrombosis, no proven theories have been put forward. It occurs at all ages and it does not seem to be at all related to arteriosclerosis. There seems to be some evidence that it is an inflammatory process produced by bacteria. In our case there at least was a round-celled infiltration of the vessel walls. It is possible that the patient's previous respiratory tract infections had something to do with the inflammatory reaction in the arterial walls, and in the formation of the thrombi.

DISCUSSION

Dr. H. L. Ulrich (Minneapolis): This is a most extraordinary case. The question in my mind is whether we ought to emphasize the thrombosis or the arteritis. Thrombosis in most instances is due to some infection. Here the infection in the vessel walls predisposed to thrombosis. The case reminds me of one we had at the General Hospital, a man about 30 years old, who was treated for six or seven months for a cardiac condition. He had right sided hypertrophy and

left sided hypertrophy too. There was no cyanosis, but evidence, near the end, of congestive failure. The interns hung on him the diagnosis of fibroid tuberculosis, then hyperthyroidism; then, as a cardiac murmur developed, of subacute bacterial endocarditis. Chronic mediastinitis, chronic pericarditis were also suggested. At postmortem he had pulmonary arteritis with multiple thrombosis. The systemic circulation was free. There was a mural thrombus in the left ventricle.

The only clinical signs of this condition are hemoptysis and right sided hypertrophy. Of course we are on the lookout for another case.

Dr. Hall (in closing): My understanding of the condition is the same as that expressed by Dr. Ulrich, that is, that it apparently begins as an inflammatory process in the vessel wall and that the thrombosis is secondary to this inflammatory process.

Dr. A. E. Benjamin (Minneapolis) reported a case of Mesenteric Cyst:

Patient, Mrs. F. M. A., age 53, housewife, married 30 years, American; height 5 feet 8 inches; weight 115 pounds. Patient has lost a great deal in weight. The patient's father died at 79 of hiccough; mother at 72 of tuberculosis; an aunt died of tuberculosis and a grandfather died of cancer.

Past history: Patient had influenza in 1918; had mumps at 35; rheumatism for 20 years, especially in the hands; appendicitis 5 years ago. Patient's teeth have not been attended to of late. The patient is nervous and irritable. Has palpitation and fluttering of the heart at times; and also pain resembling gall-stone colic for several years with apparent enlargement of the gallbladder.

Menstrual and marital history: Menses began at age of 13, regular up to last few years. Some dysmenorrhea, duration 3 to 5 days. Has had two children, normal deliveries. Laceration with the first and a phlebitis. Second delivery normal. No miscarriages. Menopause began one and a half years ago, very irregular, missed periods for six months sometimes.

The patient looks sallow, pale and emaciated, and is very nervous.

Chief complaints: 1. Uterine hemorrhage began suddenly March 10. Scanty flow since except for two days and then had another hemorrhage March 28. Had a great deal of pain with first two hemorrhages. Had to be packed to stop hemorrhage, and has been flowing off and on since.

2. Loss of weight, appetite poor, weakness and irritability.

3. Pain in lower right abdomen. Abdomen becoming enlarged a great deal.

Physical Examination: Patient wears glasses. Tonsils are present but not diseased. The teeth are in very poor condition; a number of roots present, and there is pyorrhea. The tongue is smooth and there is moderate atrophy of the papillæ but not typical of primary anemia. There are a few râles in the base of the left lung and hypostatic congestion. There is a soft blowing murmur at the apex of the heart not transmitted. The abdomen is distended and apparently a large cystic fluctuating mass extends to the right anterior of abdomen; tympany to posterior on the left, less on the right; dullness does not shift. Abdomen is not very tender over the mass.

Pelvic examination: Uterus enlarged four times its normal size, fixed and nodular. Small nodule masses in the cervix, and bleeds easily. Incompetent perineum.

Extremities: There is pigmentation of the right tibia from old hemorrhage of varicose veins, varicosity of both legs, bunions of big toes. Reflexes overactive.

Laboratory:

3-20-27. Urine normal.
4-16-27. Urine shows heavy trace of albumin, loaded with pus.
4-18-27. Albumin plus; clumps of pus.
4-23-27. Albumin plus; loaded with pus cells.
4-27-27. Albumin two plus, 30-50 h.p.f. Pus cells. Occasional blood.
3-29-27. Blood, hemoglobin 58%, declined to 39% on 4-27-27. Leucocyte 7,000, R.B.C. 3,160,000. Bleeding 2′ 30″, clotting 4′.
4-16-37. Leucocyte 16,500.
4-28-27. Blood Group IV.

X-ray examination: 4-5-27. Transverse colon, hepatic flexure and ascending colon and cecum are displaced markedly downward and to the left, apparently by smooth mass in right upper quadrant. No areas of obstruction, filling defect nor spasm.

4-6-27. Plate of abdomen shows barium in colon, same displacement to the left of colon by mass on right side, as noted before.

Preoperative treatment and progress: The patient progressed satisfactorily for a time, but was always very irritable, nervous, and hard to manage. The pulse and temperature were practically normal. Hypodermics of citrate of iron were given. 4-17-27 temperature 104.4°, pulse 140, patient coughing a great deal and had congestion of lungs with râles. The patient gradually improved, with temperature and pulse about normal so that operation was recommended and local anesthesia advised.

Operation 4-21-27, gallbladder normal. There was a large mesenteric cyst between the stomach and transverse colon containing about five or six quarts of thin serous fluid; irregular diverticulæ extending down between the stomach and colon; inner portion of the sac irregular and not uniform. Uterus four times normal, irregular, nodular and somewhat fixed. Possible carcinoma.

Operation: Removal of the mesenteric cyst. Sac dissected out except the base, which was cauterized to destroy the membrane, there being a great many large mesenteric vessels back of this part of the sac. A Penrose drain extended down to the cauterized area.

Progress after the operation was satisfactory for five days, the wound healing and moderate discharge from the cauterized area. A mild form of phlebitis developed in the left leg the fifth day after the operation. The patient became irritable, vomited some, and an involuntary action of kidneys and bowels be-

gan. Pulse 120, temperature 104° ax. Hypodermoclysis 1000 c.c. The patient became comatose next day; respiration shallow and rapid. Given blood transfusion of 400 c.c. of citrated blood, 4-29-27. The following day the temperature gradually rose to 106.2°, pulse 140, Cheyne-Stokes respirations and death at noon 4-30-27.

Important features of this case are the very large mesenteric cyst, perhaps giving gall-stone symptoms, complicated with probable carcinoma of the uterus; pyelitis, and anemia.

Dr. A. Schwyzer (St. Paul) presented the following cases and specimens:

1. Uterus from woman, 55 years old, who had complained of some bleeding from the uterus. The cervix was normal. When we curetted for diagnosis we were ready for hysterectomy. The cervix of the normal looking uterus was surprisingly easily dilated to No. 12 Hegar; this was suspicious. Instead of using a curette we entered the uterus carefully with a probang which brought material to light which made the diagnosis of carcinoma plain. Vaginal hysterectomy was done. This did not necessitate changing of the position of the patient, and allowed of a very clean removal of the uterus. A phenol-camphor gauze was pushed into the cervix and the uterus freed all around. The corpus uteri was presenting well in the posterior opening, but it was so soft that we did not dare to grasp it with forceps. This was fortunate as the carcinoma had gone practically to the very peritoneum. I show you the specimen only to illustrate how far advanced a carcinoma of the corpus uteri may be when the patient has no other signs than a very little bloody discharge, and further to emphasize the value in these cases of the vaginal procedure, from which many of us seem to have drifted away.

2. Specimen of uterus with multiple fibroids removed by vaginal route. The uterus with its many fibroids is quite large as you see; but its removal per vaginam did not give unusual trouble. The condition of these patients after the operation was as good as after a simple trachelorrhaphy.

3. The sack, or, if you choose, the travelling bag, in which I brought you these two large uteri, is the skin we removed in an enormous post-operative abdominal hernia. The woman, 67 years old, had suffered from this hernia for ten years. Usually when we operate for such a hernia we remove as little of the covering skin as we well can. Nevertheless, this large bag had to come away. There was a decubitus ulcer on the posterior surface. The hernia reached more than half way to the knees. The contents consisted of small and large intestines which were intimately adherent to the sack. In all there would have been about three feet of adherent gut if the different loops had been in one piece. Much of these adhesions had to be divided with the knife and at one place the small gut was opened, but of course sutured at once. A running catgut suture united what could be made out of peritoneum; then double looped 40-day catgut imbricated and the fascia and fine linen between made a firm closure of the fascia. A fine linen closed the skin. Seventeen days later we operated on this patient again for a complete inversion of the vagina which also dated back about ten years. There was no uterus or cervix, but the bladder was completely inverted outward. The urethra ran directly downward from the meatus and there was no posterior vaginal recess left as one usually sees in total prolapsus. The pouch contained intestines. After an extensive anterior colporrhaphy which reached the apex of the protrusion the same was done on the posterior wall, reducing the lumen of the vagina to about the size of a lead pencil. Both operations were done with local anesthesia. The patient is ready to leave the hospital.

4. The last case I wish to report was a mesenteric cyst in a lady 80 years old. She came from California with the diagnosis of a tumor of doubtful origin in the right side of the abdomen (so far as she knew). She brought a number of excellent skiagrams, which let us outline the mass as a rounded shadow of the size of a large grapefruit, directly below the right lobe of the liver. The kidney shadow is seen as superimposed in the inner portion of the tumor shadow. A pyelogram identifies it. The stomach is shown on other pictures to fill well; the duodenum, however, gives a narrow shadow as though compressed and pushed upward. The shadow of the ascending colon is to the outer side of the tumor. On palpation the large mass was surprisingly well movable laterally, but could not be moved up and down. It appeared fixed only at the upper pole, where it seemed to have its pivot. As it was not particularly tender and on account of its only point of fixation under the liver we thought it was an enormous hydrops of the gall bladder, though we had never seen one of such proportions.

Though the patient was eighty years old, we decided on operation, which was done yesterday in local anesthesia. She is in rather good condition this evening. Her symptoms date back three years and consisted of stomach distress. She had particularly much nausea the last two years, and the last two months it had become terrible, as she expresses it. She could hardly eat anything. No colic, bowels constipated. She comes from a long-lived family.

When the abdomen was opened no gallbladder could be seen; only fatty peritoneum presented and the tumor was felt underneath. We divided the peritoneal covering over the mass above the hepatic flexure. Only gradually did we recognize the topography. The tumor was yellowish and exceedingly thin-walled. Soon here and there a minute opening would let fluid escape, though we were very anxious to avoid emptying the sac before we had it peeled out, as the peeling out seemed to proceed best with the cyst at least partly filled. The walls were as thin as tissue paper; they looked necrotic but were not, as they were resistant enough to allow us to get the whole sac out with only about half of the fluid lost. This fluid was thin, turbid, yellowish, which was due to a great admixture of cholesterin. The wall, being so very thin, let the

turbid yellowish fluid shine through and this gave it the necrotic appearance.

Only a few ligatures were necessary and the abdomen was closed. The operation was done under local anesthesia; there was neither pain nor any untoward sign. Today, twenty-four hours after the operation, we had the patient out of bed to guard against lung trouble.

The location of the cyst was under the peritoneum below the pylorus and the first portion of the duodenum. The largest vessels were encountered at the pylorus, which was riding on the upper pole of the mass. After the removal of this mesenteric lymphatic cyst it could be seen that the area of the foramen of Winslow was lifted forward and that the origin of the growth was probably in the very root of the mesentery at the pancreas.

DISCUSSION

Dr. A. E. Benjamin (Minneapolis): I should like to say something about vaginal hysterectomy. I am glad to hear Dr. Schwyzer say that he likes the vaginal hysterectomy; I think I do 60 per cent of these operations per vagina and nearly all with local anesthesia. They do well except sometimes in cases where you have a number of adhesions and perhaps remove a large tumor and have to split the uterus and take it out in pieces. I have favored this operation even for carcinoma, and think I have had better results; and by following the operation with deep *x*-ray and radium, one can do quite satisfactory work.

Now about the mesenteric cyst. We had all these problems to consider—was it hydronephrosis, gall bladder disease, or ovarian cyst? We first considered mesenteric cyst, and second ovarian cyst, but could not get an *x*-ray of the kidney and were not able to go through all the final details of examination on account of the unwillingness of the patient. She did not vomit after the operation for five days.

The meeting adjourned.

Carl B. Drake, M.D.
Secretary.

BENZYL BENZOATE-L. A. VAN DYK OMITTED FROM N. N. R.

The Council on Pharmacy and Chemistry reports that L. A. Van Dyk manufactures "Benzyl Benzoate-L. A. Van Dyk," and two preparations of the drug, "Benzyl Benzoate-L. A. Van Dyk, 20 per cent," and "Benzyl Benzoate, 20 per cent, Aromatic." The Council omitted these preparations from New and Nonofficial Remedies because the advertising for these products is based on the enthusiastic reports published when benzyl esters were first used experimentally in medicine and the manufacturer did not make the revisions which were required to permit their continued recognition. (Jour. A. M. A. March 19, 1927, p. 944.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of April 7, 1927.

Meeting was called to order by Dr. E. C. Robitshek, President.

Dr. J. M. Hayes gave a demonstration of empyema cases and methods of treatment:

I have three cases of empyema which fairly well illustrate the different types of this condition.

Case 1.—Mr. F., aged 49, had pneumonia in 1916. Empyema followed but was not recognized at the time. Later the pus broke through the bronchus and he raised large quantities of pus. The physician suggested a thoracentesis but was dissuaded by one of his friends who had seen a lung abscess clear up in this manner. He raised pus for nineteen months and continued to get gradually worse. Finally in 1918 after the right lung had been completely collapsed, he had closed drainage instituted; later a Delorme decortication.

The lung expanded to about one-third normal and a partial collapse of the chest wall was done. There was still considerable cavity remaining. This was irrigated with Dakin's solution until it finally became sterile and was allowed to close in 1921. The cavity remained sterile and there were no symptoms present until three years later, when he again had an accumulation of pus in this cavity. Closed drainage was again instituted, but the patient has had a large bronchial fistula, and has continued to work without let-up, so that now there is merely an open tube in the lower angle of the cavity and there is no improvement taking place. An extra-pleural thoracoplasty would now be the treatment of choice but the patient does not want to stop work for operation.

Case 2.—Miss E., aged 32, had unilateral pneumonia in April, 1926. The pneumonia subsided after two weeks. A few days later empyema was recognized at the base of the left upper lobe. Closed drainage was instituted according to the method of Mozingo. Temperature subsided in a short time and the patient was allowed to be up. The cavity was irrigated the first week every two hours with Dakin's solution. In about six weeks the cavity had become so small and sterile that the tube was removed. The patient has been watched closely for a possible recurrence of pus but no evidence can be found. Rib resection was suggested to the patient after the second or third week but she preferred to take a chance on closure without rib resection.

Case 3.—Baby B, aged 2, had pneumonia in December, 1925. Empyema appeared synchronously with pneumonia but was not recognized early. When recognized, aspiration was done and later on, December 25, closed drainage was instituted. Temperature was 105 degrees at this time. This was a typical streptococcic pneumonia such as the adults had during the world war. The patient developed otitis media and suppuration of the cervical glands and a bronchial fistula. In spite of the bronchial fistula we irrigated with Dakin's

solution by laying the baby in such position that the fluid would reach the fistula last and with great care we soon learned to prevent forcing the solution into the bronchus. On account of the complication and consequent elevation of temperature the tube was left in longer than it ordinarily would have been. The tube was removed March 13, 1927. The child has had no symptoms of trouble since.

TREATMENT OF ACUTE EMPYEMA

Those who passed through the transitional stage of the treatment of acute empyema during the World War will agree with me that in no condition of medicine or surgery was the method of treatment more definitely established than in acute empyema. The history of the development of the treatment of acute empyema is a rather short but interesting story. Hippocrates recognized pus in the pleural cavity and evacuated it. His method of evacuation was not improved upon for 2,200 years.

In 1850 Wyman recognized the necessity of more continuous and adequate drainage and instituted such a method. Many methods of evacuating the pus have been proposed by various individuals.

In 1882, Sir Arbuthnot Lane first resected a rib to establish wide open drainage. Up to the time of the influenza epidemic, during the world war, this was the treatment of choice for acute empyema. In the strictly pneumococcic type early open drainage gave fair results, but in the streptococcic type, prevalent during the war, the results were disastrous. It was generally supposed before the war that practically all of these cases were pneumococci. At Mt. Sinai Hospital out of 574 pleural exudates examined, 133 showed streptococcic infection. Not many statistical studies were made before the World War. Moschoavitz says, "Many surgeons were laboring under a delusion that their mortality in these cases was much lower than it was."

In 1914 Wilensky tabulated statistically the results of 299 cases of empyema treated at Mt. Sinai Hospital. The mortality was 28 per cent. Peck and Cave studied the cases in Roosevelt Hospital from 1915 to 1920 and the mortality was 31.3 per cent.

Eggers, at Camp Jackson, South Carolina, studied 70 cases of empyema before the epidemic in 1917. The mortality was 27 per cent. In 1916, Lilienthal and Ware reported a mortality of 21 per cent in 38 cases in children under 12 years, and 20 per cent mortality in 28 adult cases. Cameron of Guy's Hospital in England reported a 70 per cent mortality in children during the first year and a 50 per cent mortality during the second year. Of 52 cases with early rib resection 39 died and 13 recovered. Holt reported 204 cases of empyema in children with a mortality of 74 per cent during the first year and a 50 per cent mortality during the second year.

Chandler says he doubts if primary rib resection is ever justifiable in children under four years. Cameron believes this type ordinarily found in children is the same as that found in adults during the World War. Early rib resection and a wide open drainage was the method of choice at the beginning of the war. The results were so disastrous that the so-called empyema commission was established for the purpose of devising means for instituting more efficient treatment of this condition.

The work was first taken up at Camp Lee, West Virginia. With early rib resection and wide open drainage, the mortality was 48 per cent. With early aspiration and sterilization of the cavity and late rib resection the mortality was reduced to 4.3 per cent. Stone, with early rib resection and a wide open drainage, reported a series of 85 cases from October, 1917, to October, 1918, with a mortality of 61.2 per cent. A second series of 96 cases from January, 1918, to August, 1918, with early aspiration and late rib resection reduced the mortality to 15.6 per cent. With early aspiration, later opening up and cleaning out the cavity and doing a partial closure about the tube with Dakin's solution irrigations, the mortality was reduced to 9.5 per cent.

To be sure, the virulence of the bacteria had somewhat abated, which accounts to a slight extent for this reduction in mortality, but at the same time with the original method of treatment they were still getting from 45 to 75 per cent mortality in other camps. One camp after the other, as it adopted the principles established by the empyema commission, reduced its mortality as was done at Camp Lee by the empyema commission. Camp Dodge, Iowa, first reported a mortality of 64.8 per cent, later 5 per cent. Camp Lewis, Washington, at first reported a mortality of 25 per cent, later 17 cases with no mortality. Camp Bovee, Texas, at first reported a mortality of 45 per cent, later 10 per cent.

Rodman saw 240 cases between September 15 and October 10, 1918. His mortality was reduced by following the advice of the empyema commission from 45 to 10 per cent. He says that at first he was opposed to using Dakin's solution in the pleural cavity but became converted to its use during this time.

Dederich of Camp Pike reported 147 cases with a 48 per cent mortality at first. With the closed method of Mozingo he reduced his mortality to 7 per cent.

Sherrill of Camp Sherman reported a 50 per cent mortality with wide open drainage. With closed drainage his mortality was 5 per cent.

After the war many accurate statistics were kept which showed that a definite improvement in treating this condition had been established during the war.

Mozingo reported 114 cases with three deaths.

Munson reported 43 cases with no deaths, no secondary operation and no chronic cases.

Flint and Douglas of the Yale Clinic reported 102 cases with no deaths and no chronic cases.

Harloe reported 71 cases in children and adults with 8.4 per cent mortality.

Binnie of Boston reported 100 cases from the Boston City Hospital between 1920 and 1924. These were treated without much regard for the principles that were laid down during the war. A 13 per cent mortality resulted.

Heuer of Johns Hopkins suggests that complications arise usually as a result of inadequate treatment of the

empyema. In complicated cases he reported a mortality of 50 per cent. In uncomplicated cases the mortality was 6.5 per cent. As he says, early open drainage gives an inevitable pneumothorax, disturbs the mediastinal structure, lessens the vital capacity, and impedes the expansion of the lung.

Closed drainage, properly carried out, not only eliminates the above hazards but is more comfortable to the patient and prevents the case from becoming chronic.

The method of Mozingo gives us an ideal closed drainage if properly carried out.

As soon as empyema is suspected a needle of at least 22 gauge is inserted with a large syringe attached. If pus is present it may be aspirated for a few days in like manner or a tube should be inserted about the size of a No. 18F catheter. It should fit tightly so that the air cannot enter around it. Adhesive strips may be used to keep the opening air tight.

There should be no pull on this tube at any time. This would tend to loosen the tube and allow the entrance of air. After the cavity has been reduced by the closed method to about two or three ounces capacity, little harm would result by doing a rib resection and wide open drainage. At this time the lung and mediastinal structures have become fixed, so that a pneumothorax is of little consequence.

Dr. H. B. Sweetser: It would be interesting to have a few hours to discuss this paper of Dr. Hayes'. It is very astonishing to be told that the mortality from pre-war empyema was as high as he says. I had no such idea, and from my personal experience I feel fairly sure that my mortality was not so high as he says. Dr. Hayes has divided his statistics into three periods of time. His first period has to do with the beginning of the influenza epidemic, and during this period, influenza was, per se, a very fatal disease, and I think during this period empyema would have shown a high mortality under any form of treatment. In his second period, with closed treatment, the mortality was less, and in the third period it was very much less. This third period probably has to do with the period when the epidemic had burned itself out and was becoming less and less virulent. I think it is fair to say that in any epidemic of any kind, the early mortality is likely to be very high, and during this period any kind of treatment would have a high mortality. Possibly, if this closed method of treatment for empyema had been the recognized treatment before the war, I rather think that when we encountered the influenza epidemic of 1918, it also would have fallen down as thoroughly as did the open method. Dr. Hayes mentioned a period between 1920 and 1924 in which the closed method showed a very small mortality; possibly the explanation of that is that we had become more or less immune by that time and those who were not immune were dead.

I do not think that the open method must always be a resection of a rib. I can understand, when a person with a very bad case of empyema, with one pleural cavity entirely full of pus, and the lung compressed, and the other lung doing all the work, that it is a very dangerous and frequently fatal treatment to put the patient to sleep and take time to resect a rib. If this method of treatment is carried out, I can understand the mortality must be high, for the operation itself contributes very largely. In such cases it has always been my custom either to aspirate the fluid several times and allow the lung to re-expand, or, with only local anesthesia, to thrust a pair of scissors between the ribs, and put in two small drainage tubes so the fluid will come out slowly. In children this same procedure may be carried out and the operation takes only a few minutes. It is very seldom that in children a rib resection is required at any time because there is ample space between the ribs to give sufficient drainage.

It is very difficult to convince me that it is dangerous to provide for free drainage of pus from the pleural cavity if it is done properly so as to prevent much aspiration of air.

To my mind, the important thing is to make an early diagnosis, to do as little as is necessary, to give sufficient drainage, and to do what you have to do quickly. When the compression of the lung has been relieved, if at that time the drainage is not sufficient, resection of a rib may be undertaken with comparative safety.

Thirty years ago, we were accustomed to put in two small tubes and repeatedly wash out the pleural cavity with antiseptic solutions, and the patient in many cases became worse. Now, if free drainage was made at the lowest point in the pleural cavity by resecting a rib, such patient almost always showed an immediate improvement.

If we are unfortunate enough to have another epidemic of influenza of a like malignancy as that of 1918, I fear that this new closed method of treatment of empyema will fail in the same manner as did resection in the epidemic of 1918.

Dr. J. F. Corbett: I think this is a very important subject. It calls to my mind almost the first day I spent in Rockefeller Institute taking that course which so many of us took at that time. We injected a small amount of Dakin's solution into the normal pleural cavity of a rabbit. We drew out a little of that fluid from day to day and watched the results. After a short period of time we got a little blood. Later we got necrotic tissue. Finally at autopsy the pleural cavity looked more like a fried egg. Then we found that where there was some exudate this did not take place, so that there must be in the application of Dakin's solution some indications and some contra-indications. Personally when I have seen Dakin's solution put in and it showed the least tinge of blood I quit using it.

Most of the cases started at the Institute with the closed method (and they had had everything done) finally ended up with open drainage. It seemed to me that there was an appalling number of cases that had been cured once and were operated again.

I remember the principles of treatment that I have employed before the war when I was treating a good deal more empyema than I am now. It is important to get drainage from the very bottom of the cavity. Have a long tube that will drain out the bottom. With this simple procedure it seems to me that we get in a certain definite type of case results that have not been equaled.

Dr. Ivar Sivertsen: During the war it was my good fortune to be with Dr. Max Ballin. It was also my good fortune to be surgeon for the empyema ward. Dr. Max Ballin is a very wonderful surgeon. He believed absolutely in the open method of treatment. I had eighty-nine patients at one time and I cannot believe we had a mortality up to 25 and 50 per cent. Our post-operative treatment depended largely upon the use of fat in the form of cream. We tried Dakin's solution without any apparent results. Two or three ribs were resected and in every case under local anesthesia. I use tube drainage for children but in the ordinary cases I believe in rib resection only.

Dr. J. M. Hayes (closing): Dr. Corbett has suggested an important point. Dakin's solution should not be used on normal tissue, but the war demonstration hospital at Washington definitely proved the efficacy and safety of Dakin's solution in an empyema cavity.

Dr. Sweetser's remark is no doubt true. The virulence of the bacteria in the beginning of this epidemic was much greater than it was later, but it was definitely shown that, when the mortality at Camp Lee was reduced to 4.3 per cent by the methods instituted by the Empyema Commission, at other camps at the same time the mortality was still 45 to 70 per cent. We do not need another epidemic of this kind, as suggested by Dr. Sweetser, to prove the efficacy of this treatment, but what we do need is a closer study of the excellent work done by these men who were responsible for the rapid reduction of the mortality in the various army camps.

A case of calculi in the common bile ducts and gallbladder was presented by Dr. J. F. Corbett:

I would like to report this case because it is one of a good deal of interest from the standpoint of the formation of stones in the duct. This woman had had gallstone attacks ever since she was sixteen years of age. At the time of operation she was fifty-four.

I operated on December 28, and on December 29 a tube that I had put in for drainage came out. There was bile in the stool and everything appeared normal when on January 4 a very large amount of bile drained through the opening and two days later the stools became clay colored. There evidently was a stone I had missed that came down and blocked the common duct. On January 8, the patient passed a stone by bowel and almost immediately after that bile returned to the stool. By the 15th her wound was healed.

The specimens show a hydrops of the gallbladder with cholesterin stones. The enormous square stones were in the common duct and extended from far up into the hepatic ducts to the ampulla of Vater. The entire biliary appartus was packed full. These stones were black, like cannel coal, and seemed to be of different origin than those in the gallbladder. However, on section, every one of these hugh black rectangular stones contained a cholesterin stone as a nucleus. Therefore, their origin must have been in the gallbladder. Gallbladder bile differs from liver bile in that it contains cholesterin in relatively large amounts.

It is true that stones have been found after the more or less complete removal of the gallbladder, but no reasonable explanation can be found except by assuming a vicarious function of the ducts, by assuming that a residual gallbladder has formed at the stump of the duct or that stones have slipped into the hepatic ducts at time of operation.

Dr. Ivar Sivertsen presented a paper entitled "Acute Suppurative Appendicitis: Factors in Mortality," which appears in this issue of Minnesota Medicine on page 472. The discussions will be found following the paper.

At the executive meeting following the scientific meeting, Dr. S. H. Baxter was re-elected a member of the Council for a term of five years.

Final approval was given of the plans for a prize essay contest in Clinical Surgery open to students in medicine at the University of Minnesota and to internes in Minneapolis hospitals.

Theodore H. Sweetser, M.D., Secretary.

BISMOGENOL NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Bismogenol is the nondescriptive name applied to a suspension of the well-known basic bismuth salicylate in olive oil by E. Tosse & Company, Hamburg, Germany (E. Tosse & Co., Inc., New York, distributor). E. Tosse & Company are not the discoverers of bismuth salicylate, nor did they discover the therapeutic properties of this drug. For this reason the Council could not recognize the name "Bismogenol," and therefore found the product which is marketed under this name unacceptable for New and Non-official Remedies. (Jour. A. M. A. March 19, 1927, p. 944.)

ERGOSTEROL

The present evidence indicates that ergosterol is the precursor of vitamin D, that is, the parent substance from which vitamin D is formed. It is probable that the activity of cholesterol produced by irradiation, is due to the presence of ergosterol in cholesterol. The biologic tests with irradiated ergosterol have been astounding. A daily dose of 0.0001 mg. of irradiated ergosterol has cured and prevented rickets in rats kept on a rachitogenic diet. Irradiated ergosterol is the most potent antirachitic substance known, 5 mg. being equivalent to approximately 1 liter of a good cod liver oil. (Jour. A. M. A., June 18, 1927, p. 1969.)

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

TETANUS WITH RECOVERY

REPORT OF CASE

EDWARD BRATRUD, M.D., F.A.C.S.
Warren, Minnesota

Tetanus occurs very rarely in the Red River Valley. In fact, in over twenty-five thousand registrations at the Clinic, the following is our first case. From the oldest practitioners in the Red River Valley I have collected reports of two cases seen by Dr. Dunlop and one by Dr. Holte of Crookston. Gas bacillus infection has been encountered more frequently, however, and the Clinic has reports of seven cases all resulting fatally. Hence, my desire to report the following bacteriologically proven case with successful outcome.

H. E., female, aged 11.

Family history.—Mother has chronic fibroid phthisis of long standing. Fourteen brothers and sisters living and well.

Previous history.—Measles; operations, none. Patient ran a sliver into her left foot approximately thirteen days ago, the wound of which still persists.

Present complaint.—Headache of four to five days duration gradually becoming worse; difficulty in mastication, dysphagia, and stiffness of neck and jaws, rapidly increasing in last thirty-six hours; convulsion two hours ago.

Examination (11 p. m.).—Fairly well developed and fairly well nourished child small for her age. Patient is alert and looks bright. Facial muscles set. Pupils slightly dilated, reaction fair. Able to open her mouth only 1 to 2 centimeters. Muscles of jaw and upper neck are in tonic contraction. Patient swallows with difficulty. Talks fairly well. Rational. Muscles of chest, back and lower extremities moderately spastic.

Heart regular, pulse rather full. Lungs: respiration regular, somewhat labored. Normal otherwise. Abdomen negative. Back is in noticeable orthotonus. Extremities spastic.

Mid-dorsum of left foot presents an indurated scar not unlike that seen in some primary chancres with subcutaneous induration extending longitudinally 3 cm.

Temperature 100. Pulse 112. Respiration 24. W. B. C. 15,000, hemoglobin 90. Urine negative. Weight 52 lbs.

A diagnosis of tetanus following injury was immediately made and concurred in by other staff members.

PROGRESS OF DISEASE AND TREATMENT

Tetanus antitoxin—10,500 units intravenously and 4,500 units subcutaneously immediately.

August 20. General condition worse. Irrational at times. Diplopia. 15,000 units antitetanus serum intravenously and 12,000 units intramuscularly. Treatment of wound: Reddish, swollen indurated area with necrotic center on dorsum of left foot completely excised to level of fascia. No signs of perforation of fascia. Moist peroxide dressing continuously to wound until healing occurred ten days later. Muscle spasm controlled by ether.

August 21. Condition essentially the same—possibly slight improvement. Takes liquid nourishment freely. 5,000 units antitetanus serum intravenously.

August 22. Condition the same. 10,000 units antitetanus serum intravenously. 1,500 units antitetanus serum subcutaneously. (Large amounts of serum available at this time but was outdated, otherwise would have been given.)

August 23. Condition worse. Orthotonos has progressed to marked opisthotonos. Opisthotonos so marked it requires three pillows for mid back. "Risus Sardonicus" very marked. Had one convulsion. 15,000 units antitetanus serum intraspinally—ether anesthesia necessary. 20,000 units antitetanus serum intravenously. Very marked reaction for 24 hours.

August 24. 20,000 units antitetanus serum intravenously. General condition noticeably improved. Less rigidity. Able to flex legs somewhat. Headache and backache persist. Fluids, however, regurgitate through the nose.

August 25. 20,000 units antitetanus serum intravenously. Marked improvement as regards general condition and flexion of limbs. Opens mouth, masticates and swallows. Headache persists.

August 26. 20,000 units antitetanus serum subcutaneously. Marked improvement throughout. Able to take modified soft diet.

August 27. 10,000 units antitetanus serum intravenously. Improving.

August 27 to September 6, inclusive. Patient improved gradually, with headache and backache gradually clearing and on September 6 patient was able to walk about and be transported to her home.

Treatment in addition to that outlined above consisted briefly of absolute rest and quiet in darkened room, nourishing liquid diet and ample fluids by mouth, by rectum, subcutaneously and intravenously. For relief of spasms and convulsions—codein regularly, also chloral, which proved very efficacious. Ether and morphin as conditions demanded.

Total amount of antitetanus serum—162,500 units. Attention is called to the weight of the child (52 pounds) in relation to the amount of serum used.

September 3, 1926, specimen of entrance wound examined by State Board of Health disclosed definite anaërobic spore-bearing tetanus bacilli.

Prognosis in tetanus depends greatly upon the length of incubation period.

Entrance wound in this case was left foot. Involvement, however, was bilaterally symmetrical.

Various authorities differ on the efficacy of intravenous, intrathecal, subcutaneous and intramuscular injections of serum but I believe the judicious use of the different routes most successful.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which ney run across in their reading and send the abstracts o the physicians in charge of the respective sections. In rder to avoid duplication it would be well to communiate with one of the section supervisors before the rticle is abstracted.

MEDICINE

SUPERVISORS:
F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE VALUE OF RENAL FUNCTION TESTS N THE DIAGNOSIS OF EARLY NEPHRITIS. oseph T. Wearn (Medical Clinics of North America, Aarch, 1927). Cushny's "Modern Theory" of urinary ecretion is now generally accepted through the work f A. N. Richards and the confirmation of White and chmitt.

Richards' observations on the capillary circulation in he frog, in which he proved that a large reserve of he glomeruli remain inactive during physiological exretion, is noteworthy. The kidney normally has only nough glomerular units in action at any given time o perform the work required of it. A quantitative ncrease in glomerular function is brought about by he use of diuretics, urea, salt, glucose and water.

The tests devised for measuring renal function may e placed in two groups: (1) Tests which are deigned to measure the output of a substance in a iven time, but which do not throw additional work r a strain upon the kidney—such as phenolsulphonehthalein, lactose and the iodid tests. (2) The second roup includes those procedures which test the ability f the kidney to respond to sudden strain, by addition o the load of kidney excretion of foods in the diet, hich in increased amounts create a functional strain, amely, proteins, salts and fluids. The most frequenty used and the most useful of the latter tests are he water excretion test of Volhard—used extensivey in Germany—and a modification of it, Pratt's test, sed in this country. The urea concentration tests of MacLean and Addis, particularly the latter, are of linical value. The water excretion test of Volhard nd Pratt's modification thereof are more simple and ield the same results as the slightly more technical est of Hedinger and Schlayer and the modifications f Mosenthal and Christian. These latter tests are of alue in estimating the efficiency of the reserve units f the kidney, which is not true of the P. S. P. test, ince it places low grade strain upon the kidney and does not in any way measure the reserve units. This latter test shows no material reduction until the kidney is greatly damaged or until the reserve units have been largely destroyed, at which time the clinical diagnosis is usually evident.

Foster, by his tests on patients with one kidney, has shown that the tests of Addis and Volhard are more delicate than those of Mosenthal and Christian. Positive confirmation of renal disease by the Addis test was of value in patients in whom the P. S. P. test and the blood nitrogen were normal. This would indicate that the more delicate tests are of value when the kidney function is reduced 50 per cent. The P. S. P. test does not show a diminution in the dye until approximately 66 per cent of the kidney tissue is absorbed.

The Addis test is performed by giving 30 grams of urea in a litre of water, and following this with two glasses of water per hour for three or four hours. The amount of secreting tissue is measured by determining the urea in the blood and in the hourly specimens of urine.

F. J. Hirschboeck, M.D.

LIVER DIET IN PERNICIOUS ANEMIA. Geo. R. Minot and Wm. P. Murphy (Medical Clinics of North America, March, 1927). Since May, 1926, when the authors reported their first observations on the dietary treatment of pernicious anemia, with a diet particularly rich in liver, they have observed seventy consecutive cases, in which they believe they have proved that the red blood corpuscles in nearly all patients with pernicious anemia can be very markedly increased. An increase from 1,500,000 to 3,000,000 per c.mm. in about four weeks has been the rule, the rate of increase becoming slower as the blood count rises. In two months the red blood cell count is usually 4,000,000 per c.mm. The symptoms of spinal cord degeneration remain present. When the bone marrow has been severely affected, regeneration is much slower.

The diet should be carefully weighed and consist of the following foods:

1. Liver (essential).
2. Fruits.
3. Red muscle meat.
4. One to ten per cent vegetables.
5. A limitation of fats to 70 grams.
6. The avoidance of grossly sweet foods.
7. Limitation of milk to one-half a pint.
8. Starchy foods, such as cereals, potato and bread, to suit the individual tastes.

If the patient is unable to eat much food, liver and fruits should be used at first, gradually adding meats and vegetables, as the appetite improves. Starch should be continued, even though the red blood cell count remains high. It is believed that raw liver is more efficient than cooked liver. The diet is not as efficient when transfusion has been employed.

F. J. Hirschboeck, M.D.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

ON THE MECHANISM OF THE TRANSPORTATION OF OVA. I. RABBIT UTERUS: Robert Kho-Seng Lim and Ch'i Chao (Chinese Jour. Physiol., 1927, I, 175-198). Rabbits were used throughout the observations. Segments of varying lengths were resected from the uterine horn, and the cut ends reunited after reversing the intervening segment. Laparotomies were performed after two weeks and if all was well the animal was mated. For the purpose of control, segments of uterine horn were divided in other animals, and anastomosed without reversal.

Seventeen fetuses were produced by does with partial reversion of both horns, while six were produced by does with total reversion of both horns. It was concluded therefore that reversion of either a portion or the whole of the uterine horn offers no essential impediment to implantation in any part thereof. The reversal, however, with its attendant sequelæ (adhesions, torsion, etc.) tends to diminish the frequency of pregnancy.

The authors concluded from their observations that ciliary activity probably plays no essential role in the transportation of the ovum in the horn. The transport of ova in the uterus must therefore depend chiefly, if not wholly, on the muscular contration of the uterus. The presence of to and fro movements, persistalsis and anti-peristalsis in the uterus was believed to have been confirmed in these observations. Work has also been done on the question of ovum transportation in the oviduct, but has not progressed sufficiently to warrant publication.

HAROLD E. SIMON, M.D.

FRACTURES OF THE TRANSVERSE PROCESSES OF THE LUMBAR VERTEBRÆ: Robert H. Kennedy (Annals of Surgery, 1927, 85, 519-528). From the scarcity of references in the literature one would think this lesion either rare or of little moment. The author reviews the literature and reports ten cases.

The lesion may occur from direct violence or muscular strain, such as lifting, et cetera. Severe pain and tenderness were present in the lumbar region in all these patients but not so localized as to indicate the process fractured. Many of the patients were perfectly comfortably while lying flat in bed, but suffered pain on attempting to turn over or to sit up. Aside from those with associated spinal cord injury, all but one could stand. Resistance of the lumbar musculature was present in all patients. In two cases there was abdominal rigidity for forty-eight hours. Swelling of the soft parts was mentioned in severe cases. In all cases, the normal back movements were restricted because of pain. There was no deformity except from the swelling of the soft parts.

The diagnosis can be definitely made only by radiograph. In the ten patients reported, there were thirty-two transverse processes fractured.

The length of disability in these cases is particularly important because the majority of them occur in the class of people covered by compensation insurance. It is generally conceded that the duration of disability should not be long, and may be materially reduced if the patient is not allowed to appreciate that any fracture is present. Except for the two cases with accompanying spinal cord injury, the hospital stay for these patients ranged from two to thirty-two days. At the end of this time they were able to walk but not to return to their usual work.

The treatment suggested includes plaster jackets, strapping and rest in bed. The author uses physiotherapy in the form of heat and massage, and the static machine is substituted for manual massage when the patient is allowed out of bed. The patients were strapped when indicated.

Bony union of the fractured transverse processes is definite in some of these cases. The majority of these patients should be at work within two months with practically no complaints referable to the injury.

HAROLD E. SIMON, M.D.

REVIEW OF 3,600 THYROIDECTOMIES: Joseph DeCourcy (American Journal of Surgery, 1927, No. II, 225-227). The ages of the patients varied from 17 to 84. Of the various types operated upon the diffuse parenchymatous type, of mixed adenomas and colloid, greatly predominated.

In regard to etiology, the greatest number could be traced to puberty, even through pregnancies. Heredity seemed to play a part, but the hypertrophies usually became apparent in the early adolescent period and in no instance could the typical fetal adenoma be found. The exophthalmic type appeared to be of sudden onset for the most part. It would occasionally develop upon an already existing colloid or adenomatous goiter. Worry and emotional strain seemed to be factors in the development of exophthalmic goiter.

Toxicity varied greatly in different cases. The most toxic were the exophthalmic cases in adults below twenty years. Recently there have been a large number of toxic colloid goiters occurring early in life and almost invariably these have had prolonged medication, principally iodine in the form of Lugol's solution. This iodinization must be allowed to subside before operation or we may expect an almost uncontrollable reaction.

Colloid and adenomatous goiters with only slight toxicity require little if any preoperative preparation but as the toxicity increases greater care and judgment are required.

The exophthalmic cases are, of course, prepared with Lugol's solution. Great care should be exercised in

iving Lugol's solution over a long period, as it is, as ar as we know, only a means of preparing exophthalic cases for operation and must not be considered as cure.

Postoperatively the patient is put in Fowler's position and is given proctoclysis, morphine, ice cap over he precordium and Lugol's solution. In severe toxic denoma and exophthalmic cases the wound is left pen for twenty-four to forty-eight hours.

The mortality during the past three years has been ss than one per cent in all cases.

HAROLD E. SIMON, M.D.

THE RESULT OF ARTIFICIAL PNEUMOHORAX TREATMENT IN PULMONAY TUBERULOSIS WITH A SYNOPSIS OF 182 CASES: ao Bahadur (Indian Medical Gazette, 1917, 62, 69-71). he Hippocratic School seems to have practiced artiial pneumothorax in pleurisy and other pulmonary onditions 2,000 years ago; in modern times it was rst employed by Forlanini in 1894. The principle on hich this treatment is based is the enforced rest iven to the diseased lung by introducing air into he pleural cavity and collapsing the organ by equalizng the atmospheric pressure inside and outside the ung. The contraction of the lung-tissue not only reults in the ejection of the toxic contents of the cavities nd the bronchial tubes, but prevents the further acumulation of these products and hastens the process f fibrosis and repair.

In the author's cases about 250 c.c. of air was introduced during the initial operation and increasing mounts during successive refills, the maximum quanity given at any time not exceeding 800 c.c. and sually not exceeding 500 c.c. The intervals between he refills were slowly increased from 2 days to 3 weeks.

Ordinary medicinal and sanatorium methods were sed in addition to the collapse therapy. Twenty-two er cent of the cases were arrested in stage II and III y pneumothorax treatment, while only 14 per cent of ases obtained the same benefit by ordinary methods. The progress of the disease was remarkably affected y the successive inflations. High temperature which ad resisted weeks and months of ordinary treatment ame down to normal or nearly so in a few days or weeks and the sputum became bacillus-negative in a remarkably short time.

This treatment is applicable to only about 5 per cent of cases. There is no object in applying it in the first stage unless ordinary treatment fails after 3 months. Unilateral cases, cases with less than one-third of the opposite lung implicated, cases of severe hemoptysis, pulmonary abscess, bronchiectasis, et cetera, come under the category of suitable cases, but extensive bilateral involvement, advanced diabetes, cardiac and renal complications and peritonitis and intestinal ulceration contra-indicate the employment of pneumothorax therapy.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
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ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

MEASLES PROPHYLAXIS BY USE OF CONVALESCENT SERUM, ADULT BLOOD OR SERUM. Samual Karelitz, M.D., and Samuel Levin, M.B. (Amer. Jour. of Diseases of Children, March, 1927). It is the aim of this paper not only to increase the reports of results obtained with the use of convalescent serum, but also to emphasize the fact that whole blood, defibrinated or citrated blood, and serum or plasma obtained from adults who have had measles may be used prophylactically. Thus, a child may be protected completely for a short time, or may be given partial protection and permitted to develop a mild type of measles which results in a longer and more lasting, even permanent immunity. When it is safe to permit the child to have this mild measles, it is far more desirable than complete protection, which usually results in a very transient immunity.

The authors feel that the modified measles is usually innocuous and may be very much less contagious than the ordinary disease.

Children under 2 years, children suspected of tuberculosis, infants in hospitals or nurseries and others in whom measles would be a dangerous complication, should be treated for the purpose of obtaining complete passive immunization. All others would benefit more if given small doses or late injections of serum, which would lead to a mild, modified form of measles and to lasting, possibly permanent, immunity.

Convalescent serum has the greatest immunity titer from six to ten days after the temperature has reached normal. Adult donors should be free from tuberculosis, syphilis and other transmittable infections, and they must have had measles.

For complete protection of a child up to 3 years of age who has been exposed from one to four days, 5 c.c. of convalescent serum, 25 c.c. of adult serum or 75 c.c. of adult whole blood is given intramuscularly. If exposed from five to seven days, the same child should receive 10 c.c., 30 to 40 c.c. or 75 to 100 c.c. of convalescent serum, adult serum or whole blood, respectively. For children aged 3 years or older, the dosage for complete protection after exposure of from one to four days is 10 c.c., 30 to 40 c.c. or 75 to 100 c.c. If exposed from five to seven days, the same child should receive from 15 to 20 c.c., 30 to 50 c.c. or 100 to 150 c.c. For production of a modified form of measles, one third to one half of these doses is given.

R. N. ANDREWS, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:
VIRGIL J. SCHWARTZ,
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,
FIDELITY BLDG., DULUTH

BRAIN ABSCESS AS A COMPLICATION OF MIDDLE EAR SUPPURATION. James Harper (Practitioner, February, 1927). The complete, classic, text-book picture of a case of brain abscess is found only in very late stages of the disease. A diagnosis, therefore, must be made early in order that surgical intervention may be of some value.

Chronic middle-ear suppuration is, or has been, present in the great majority of these cases; acute suppurative otitis causes about twenty per cent of them. Some patients will state that the discharge stopped just before the present serious symptoms developed. Rarely the middle-ear inflammation may have subsided while that in the antrum and mastoid cells has increased; such cases give no history of a discharging ear, and the drum may appear practically normal. Headache, dull and steady, is always present, and may be general or localized to the affected area. The temperature may be elevated (usually not over 102 degrees), normal or subnormal, being most often subnormal.

The pulse may be normal, but is frequently slower, due, not to the size of the abscess, but to inflammatory extension outside of the abscess capsule.

The mental condition, "slow cerebration," is often present; the patient answers question intelligently, but only after a considerable interval. The position in bed is not characteristic. Vomiting is not very frequent in intracranial ear-complications. Constipation is common, and the tongue is furred. Eye findings are not characteristic; anisocoria, muscular paralyses, inflammation and edema of the nerve head have been seen.

As to localization, temporo-sphenoidal abscess very often shows paralysis of the facial muscles of the opposite side, and later paralysis of the arm and leg. Speech disturbance—the inability to name objects—indicates trouble in the left temporo-sphenoidal area. Abducens paralysis and sensory or motor aphasia assist the localization. Individual ocular muscle paralyses would indicate a cerebellar rather than a temporal lobe lesion. Further, in cerebellar abscess we should expect to find an ataxic gait, a tendency to fall to the affected side, perhaps a positive Rhomberg, a spontaneous nystagmus to the same side, and inaccuracy in the pointing test. Also, in posterior fossa involvement there may be stiffness and discomfort on pressure of the muscles at the back of the neck; moreover, there may be slow extension, after flexion, of the limbs on the affected side. Some or most of the symptoms above described are present in the active stages of brain abscess, though at times they may be indefinite even in these stages. However, in the latent stages there may be no symptoms whatever, or, if there are, they may be so vague as to point rather to a systemic disturbance. Not infrequently an unsuspected brain abscess is discovered while operating a mastoid. If the case is allowed to progress to a late stage, when a diagnosis can be easily made, other complications, such as meningitis, may prevent a successful operative result.

One symptom, already cited, is almost always diagnostic of temporo-sphenoidal lobe abscess: it is the appearance in a patient who has a middle-ear suppuration, of facial paralysis on the opposite side, followed by paralysis of the arm and leg.

VIRGIL J. SCHWARTZ, M.D.

THE TREATMENT OF ANTRAL DISEASE BY SIMPLE TUBE DRAINAGE: R. E. Mercer, M.D. (Annals of Otology, Rhinology and Laryngology, March, 1927). The author reports his results in a series of 230 cases of antral disease treated by simple tube drainage.

The operation is the same as ordinary aspiration of the antrum. Very little discomfort was complained of. The average time of leaving the tube in the antrum was eleven weeks. Cure may be delayed, but eventually follows the prolonged use of the tube. In one case cure was obtained after fifty-two weeks of use of the tube.

CONCLUSIONS

1. A large number of antral diseases are not secondary to either disease of the teeth or other sinuses.

2. Simple aeration with drainage is effective in curing 85% of all cases.

3. Antral operative work is of little value in relieving asthma.

4. Antral drainage may be beneficial in relieving chronic bronchitis.

5. The antrum may be the source of infection in rheumatism, but less than 5% of antral disease patients complain of rheumatism. In those who do, an operation may be of decided value.

6. Postnasal dripping may be caused by antral as well as other sinus disease, and an operation may give much relief.

E. L. ARMSTRONG, M.D.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

Practical Otology. Morris Levine, M.D., Assoc. Prof. of Otology, New York Post Graduate Medical School. 385 pages. Illus. Cloth, $5.50. Philadelphia: Lea and Febiger, 1927.

International Clinics. Vol. II, 37th Series, 1927. Cattell, Henry W., A.M., M.D., and others. 308 pages. Illus. Philadelphia and London: J. B. Lippincott Co., 1927.

Lectures on Internal Medicine. Knud Faber, M.D. 147 pages. Illus. Cloth, $3.00. New York: Paul B. Hoeber, Inc., 1927.

Practical Lecture Series. Second Series, 1924-1926. The Medical Society of the County of Kings, Brooklyn, N. Y. 590 pages. Illus. Cloth, $7.00. New York: Paul B. Hoeber, Inc., 1927.

Disorders of the Nose, Throat and Ear. Aaron Roth, M.D., F.A.C.S. 238 pages. Illus. Cloth, $2.50. Brooklyn: Physicians and Surgeons Book Co., 1927.

The Human Body in Pictures. Jacob Sarnoff, M.D. 120 pages. Illus. Cloth, $2.00. Brooklyn: Physicians and Surgeons Book Co., 1927.

THE BELOVED PHYSICIAN—SIR JAMES MACKENSIE. R. McNair Wilson. $4.00. 316 pages. New York: The MacMillan Company, 1926.

The inspiration of another great life of accomplishment in the medical profession is given in this biography of Sir James MacKensie, written by his friend and pupil, R. McNair Wilson, who says in the preface "For myself I owe to him all of that little that I know of medicine. I held him in love and reverence. I have written of him as a humble follower writing of his Master." He begins his story with a pen picture of Sir James as he appeared during his last years, sitting before the fire, with his visions of clinical research in his eyes, watching, undismayed, the inexorable advance of his fatal malady, angina pectoris.

He was a Highlander of ancient lineage and his father was a stern but just Scot. His mother was a gracious and kind woman who had a great influence upon his life and who made an inerasable place in his memory by always placing a light in the window to light her son home. Because of his inability to memorize his lessons, he early became convinced that he was a dunce and this laid the foundation for one of his greatest assets—the modesty that followed him throughout life. Greatly discouraged, he left school at the age of fifteen and, attracted by the colored glass bottles in the window that promised romance within, he became an apprentice in a chemist's shop. The romance did not materialize and he soon regretted his step but continued with his work until at the age of twenty-one he refused a partnership in the business to go to Edinburgh to study medicine. When he had finished there he served as House Doctor at the Edinburgh Royal Infirmary and then went to Burnley as an assistant to a general practitioner. As soon as he started practice he was greatly troubled by his inability to interpret clinical symptoms properly and make accurate prognoses. He early acquired the habit of the detailed recording of all symptoms and patiently watched their outcome. By the sudden death of one of his young patients during delivery he was soon attracted to the study of diseases of the heart, particularly irregularities, and began making pulse tracings. In the midst of this busy work, at the age of thirty-four, he met and married Miss Frances Jackson, a step which brought him a lifetime of happiness, sympathy and understanding.

In his attempt to perfect pulse tracing he constructed a machine for the purpose (the first polygraph) which he carried about with him and used in farm houses and cottages throughout the country-side. He gradually formulated pioneer ideas of irregularities of the heart, particularly the difference between the innocent and dangerous types, but because they were considered too radical he was unable to get them accepted by the leading medical journals. At the age of forty-nine he published a book, "The Study of the Pulse," but it attracted attention only from foreign readers, a few of whom (William Osler among them) journeyed to Burnley to see his work. He then realized that to gain the attention of the authorities upon medicine in his own country he must carry his work to some large medical center, so at the age of fifty-four he left his safe practice and pleasant home at Burnley and went to London to attempt to deliver his message. The first year was very difficult with the heavy expense, practically no income and the death by meningitis of the younger of his two daughters. He utilized his spare time in writing books which brought him his long deserved recognition and he found himself famous with practically every honor, including knighthood, showered upon him. He soon found, however, to his great disappointment, that his fame was due to his mechanical contribution of the polygraph and not to his idea of getting at better interpretation of clinical symptoms as the key to the diagnosis of disease. He continued however, and under his direction the electrocardiograph in the hands of Lewis was perfected and he found himself the unwilling center of a "school" which gave all its attention to research in physiology and pathology with the mechanical side of diagnosis emphasized and the question of the individual patient forgotten. This was interrupted by the World War, when he devoted himself to the question of estimating the heart strength and when he had a hospital dedicated to the work. As soon as this was over he decided to leave the bewildering "school" which he had unwittingly founded and go back to general practice, because he felt that this most important phase of medicine was being neglected. He chose St. Andrews as the field for his labors. Here he coöperated with the physicians already there and opened an out-patient clinic for out-of-town physicians and their patients, forming the foundation for the development of the St. Andrews Institute of Clinical Research (now

known as the James MacKensie Institute of Clinical Research). To this enterprise Sir James gave unstintedly of his time, thought and money, even returning to consultation practice to obtain additional funds for it. Very soon after this work was begun he realized that he was stricken with angina pectoris, but he proceeded with his work and redoubled his efforts so that he might accomplish as much as possible before the disease curtailed his activities. He accomplished his aim by finishing the proof reading of his big book and the review of the work of the Institute published as "The Basis of Vital Activity" before his death, Jan. 26, 1926.

Mr. Wilson has succeeded in giving a faithful portrayal of the monumental work of one of the great leaders in the medical profession. He gives the reader an intimate detailed account of the ideals in the mind of the great man as well as the great work accomplished and the reader sees Sir James as a man to be respected and admired. But by omissions of all personal details, he fails to give the reader a picture of Sir James himself, a man to love. He attempts this at the last when he says: "A man rich in achievement and full of service, yet with the eyes of a boy. He was a great man of science, a great observer, a great thinker, a great controversialist. But over and above all these things he was a great man, a great friend, true in heart, noble in spirit, dauntless in courage."

This book should be read by every physician and to him it will bring inspiration and knowledge that the great contributions to science are frequently made, not by highly trained research workers in elaborate Institutes, but by humble workers leading lives filled with busy routine but with hearts and minds fired by the divine spark of desire to find truth.

MARGARET WARWICK, M.D.

AMERICAN MEDICAL ASSOCIATION DIRECTORY, 1927. 2,575 pages. Cloth, $15.00. Chicago: American Medical Association, 535 North Dearborn Street, 1927.

For more than twenty years the American Medical Association has been publishing a directory of the medical profession. Ten editions have appeared, the last one (1927) being just off the press.

The first edition (1906) contained 128,171 names of physicians in the United States, its dependencies and Canada. The new Tenth Edition includes 164,002 names. There is an increase of 2,644 over the previous edition. If the Directory were merely a list of names and addresses of physicians it would not have great significance. That information is valuable, but of far greater value is the fact that the Directory gives proof of the right of each physician listed to practice medicine—namely, time and place of graduation and year of license. In addition, society membership, specialty and office hours are included. Capital letters indicate those who are members of their county medical society, and a special symbol follows the names of those who are Fellows of the American Medical Association.

The information concerning hospitals and sanitariums of the United States is another valuable and extensive feature. Descriptive data appear following the names of 7,816 hospitals and sanitariums, such as type of patients handled, capacity, and name of superintendent or director.

The list of physicians in each state is preceded by a digest of the laws governing medical practice in that state; members of licensing board; state board of health; names of city, county and district health officers; officers of constituent state associations and component county and district medical societies. The book, in short, is one vast source of reliable data concerning the personnel of the medical profession and the institutions and activities closely related to it.

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LOCUM TENENS work wanted by experienced physician. Address C-140, care MINNESOTA MEDICINE.

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ILLINOIS LAY EDUCATION PROGRAM*

R. Ralph Ferguson, M.D.
Chicago

About four years ago the House of Delegates of the Illinois State Medical Society authorized the Council of the society to form what was then called a Lay Education Committee, but without instructions as to its duties except as was implied in the name of the committee; nor was the committee to be supplied with any funds.

However, at the end of twelve or fourteen months the committee had raised by voluntary subscriptions from our members of ten dollars or less, some ten or twelve thousand dollars, and we seemed therefore in a fair way to do something definite in educating the public about "something"; just what that something was, had not yet taken form.

But no sooner had word gone abroad that the medical men had money to spend on something—publicity, oil wells or what not!—than we were besieged by so-called publicity agencies, private newspaper writers, etc., who took our committee and even the council up on the high mountains surrounding Illinois, and promised to spread publicity into every nook and corner of our beautiful state, if we would only turn over a portion or all of our spending money to them. We all but fell into their trap.

One year had passed and nothing had been done except to raise the money, so we spent the first part of the second year securing and then unsecuring directors, each time spending a little of our hard subscribed money on experience.

During that second year, we secured the services of Miss B. C. Keller, who was with this committee until January 1st last, and who made many and valuable contacts during her stay with us.

By the end of the second year we had arranged a fairly definite program, but our money was giving out. Our committee therefore devised a plan of a per capita tax on members of our state society, brought it before the House of Delegates at the state meeting, and had it ratified unanimously. Our tax is approximately $1.74 per member per year and gives us a yearly income of approximately $13,000.

It may surprise many of you to know the volume of work we are able to do on this allowance.

With this brief description of our early vicissitudes let us launch at once into the activities which we have thus far found valuable, not only to ourselves, and to all those organizations with which we have had the pleasure of coöperating, but most of all to the public in general who are already reaping health and happiness from our educational activities.

The words "propaganda" and "lay education" have been dropped from our vocabulary, as they are misleading and immediately put into the mind of the hearer a false meaning of our mission to humanity. We are neither a labor organization (although we recognize the necessity of such an organization of high minded men), nor are we an organization of business or professional men (although we believe in their existence), but we are an organization with an ideal and that ideal is service to humanity, the relief of suffering and the prolongation of life.

With these thoughts in mind we have formed our policies and ask that the members of our state society work as members of our committee in all our undertakings.

Experience has taught us to discard some of our early policies, as it has also taught us to hold fast to certain others. Coöperation with lay-medical organizations was something new to our committee, and you must know that a great deal of education of our own members was necessary in order to do any effective coöperating. Roughly speaking, about one third of our time and energy is spent on the education of our own members, and while we are doing this, we are also strengthening our county medical societies and assisting our legislative committee in its

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minn., June 30 to July 2, 1927.

strenuous work of combating bills detrimental to the health of our people.

Still another, and very necessary activity has sprung from our work in county medical societies; that of furnishing post-graduate work and taking it directly into the county where requested.

At the time this important work was undertaken by our committee, a special sub-committee was formed, called the Scientific Service Committee, with Dr. James H. Hutton as chairman. We now have every large medical school in Illinois and practically every teacher and clinician coöperating in this valuable undertaking. Any county society may now have one or all of their scientific meetings planned in advance, although the committee encourages the use of one or more local papers on all programs.

When the Scientific Service Committee was appointed, our name was changed to the Educational Committee, and is now known as such.

The county society is a unit of the state society and our committee has held fast to the principle that the county medical society is supreme in all health matters locally. We believe that the County Society should be consulted by all city and county officials and all health agencies of whatever description, on all medical and health subjects, for the reason that the physician is by education and training best fitted to give expert advice on all health policies. We do not believe the county medical society should be called on to do the actual work; that should be done by the lay-medical organizations and health authorities in consultation with the medical men. We do not believe clinics, baby shows and preschool examinations should be held without consulting the county medical society. As a state society we frown on free clinics of any kind or description in communities where such service can be paid for. We believe in free medical service, both curative and preventive where indicated, and we are always glad to give freely of our service to all those charity cases, who are already receiving charity of some kind or another. We are slowly learning that the indiscriminate use of medical charity is demoralizing to the public; and through our passive resistance as medical men to such charity, it is also demoralizing the profession. Free medical charity is not worth much unless given with the desire to be of service to humanity. Only a few charity clinics fulfill this requirement.

The days of passive resistance on the part of the medical profession are slowly drawing to a close in Illinois, and we believe the time is not far distant when every lay-medical organization in the state will be working with our county societies, and will assist us in eliminating all free medical service except to those deserving the same.

At the present time the work of our committee may be classified under six distinct headings:

1. Speakers Bureau
2. Radio
3. Press Material
4. General Health Education Service
5. Coöperating Organizations
6. Scientific Service Committee

Speakers Bureau.—For almost three years we have maintained this bureau as one of our most important activities. But a speaker is liable to go wild when he gets before a large lay group, so we not only choose our speakers with great care, but we also outline what they shall say. We found in our early work that even such precautions did not sufficiently safeguard us, so we devised two forms of questionnaire, the first to be filled out by the speaker himself, telling us what he thinks of his audience, the receptivity, applause, etc., the second to be filled out by the organization before which the speaker appeared. This makes for a well balanced check-up. To illustrate the need of these safeguards: A certain woman's organization, about twenty-five miles from a good sized town, was desirous of having a good speaker for one of their district meetings. Our secretary made all the arrangements for one of our new speakers to fulfill this engagement on the appointed day. As usual we wrote to our speaker inquiring about the meeting and requesting his expense account. At the bottom of our letter he wrote the following notation: "Successful meeting, glad to be of help to you, no expense incurred." By the next mail we received from the club a letter stating that their meeting was very succesful and well attended, but that our speaker never showed up. Needless to say it took many months for our committee to square ourselves with that organization, and our new speaker, a prominent mem-

er of our state society, lost a wonderful opportunity.

We are now furnishing speakers in any part f the state (without expense) to any lay group hich so requests. We are serving the following organizations:

Illinois Federation of Women's Clubs: Rotary, Lions, Kiwanis, and Exchange Clubs; arent-Teachers Association; Churches; Farm nd Home Bureaus; Business and Professional Vomen's Clubs; High Schools; Normal chools; University of Illinois Extension Service; Boy and Girl Scouts; Y. M. C. A. and . W. C. A., and recently groups in manufacturing plants, such as the Western Electric, Armour and Co., etc.

We have repeated calls for speakers from hese organizations, so we are confident our peakers are pleasing, and all of our speakers re members in good standing of the state society. We are planning on giving our speakers course in public speaking.

Radio.—Our radio service is something we are ery proud of and is a definite and popular feature of our educational work. Programs are arranged for any local community having a broadasting station, except W.O.C. at Davenport. y the way, you may be interested to know that our years ago there were about 3500 students t WOC, while today there are about 450. The llinois State Medical Society claims the credit or this decrease as we have been successful ear after year in combating vicious legislation hich would allow hundreds of low grade nonedical men to ply their wares on the innocent ublic.

At the present time and in the fall we will ave regular talks over WGN, WLS, WMAQ nd several other well known stations. Our adio talks are as carefully checked up as are our peakers.

Press Material.—This is the one great medium hrough which we expected to direct the people ack to scientific medicine, not through paid advertising, but through press material on health ducation of interest to the local communities, egularly supplied. If Brady, Reed and Evans re good (and sometimes they are), then the ombined membership of our society should be etter. We are, therefore, constantly gathering aterial, rewriting, censoring and rechecking material for our regular users. But, please remember that after our committee is through with checking this material, it is then sent to the county medical society, in which county it is to be used, for a re-check. Some of the articles are unsigned, but most of them are signed by the county medical society. Our subjects are made to fit the local needs.

We have some eighty or more newspapers in Illinois using our material constantly, some weekly, semi-weekly, bi-weekly and daily, and you may be sure it keeps our committee hustling to supply the demand. This service is free to the newspapers. Only recently our committee, cooperating with the Chicago Medical Society, has begun a series of six weekly articles in the Herald Examiner of Chicago. This is our first contact in so large a city. These articles are censored by every member of our educational committee, and needless to say a goodly number of articles never go to press. These articles appear under a special streamer with the special hading "under the auspices of the Educational Committee of the Illinois State Medical Society," and are signed by the contributor. This is the only ethical way such articles may be signed. We have no trouble in getting our members to write these articles, but we do have hard work keeping everybody from writing them. We have received many favorable comments on these articles, as well as those published throughout the state. This work will be continued for the present, but the committee is not sold 100 per cent on this work, as it is on the speakers bureau and radio talks.

General Health Education Service.—This consists in the furnishing of moving picture films on health subjects and in supplying the same to many groups. We obtain these films from many sources and pay rental on them if required. We also arrange posters and health exhibits for high schools, clubs and many other organizations, together with a special program on health educational activities. At the present time we are rewriting the health material for the Child Hygiene Division of the Illinois State Department of Health.

Furthermore, we are working in coöperation with the Extension Service of the University of Illinois on the examination of Honor Girls in the four-H Clubs. The state dental society is

also working with us, and girls will be examined in ten counties. Letters have been sent to county superintendents announcing our plans for a series of lectures in high schools and offering our services in furnishing speakers for county institutes. More than twenty requests have already come in for speakers for institutes and several superintendents have signified their interest in the Series.

Cooperation with other organizations.—During the first two years this subject did not appeal to our committee, but as we became personally acquainted with leaders in some of the lay health groups, we decided they were not such a bad lot. We even consented to break bread with some of them, and actually found some subjects we could discuss in common, and some health work we might coöperate in. This was good news to both groups.

Some of our first and most reliable contacts were with the Illinois Federation of Women's Clubs, with some 80,000 members; the Parent-Teacher Association of some 80,000 members; the Illinois State Department of Health, and the Illinois State Dental Society. We have sat around the table many times with these groups and discussed the welfare of the public health. We are constantly supplying all of them with speakers, while our physicians are coöperating with the Illinois State Department of Health, Child Hygiene Division, and were helpful in increasing their appropriations by $20,000 for the next two years. We believe that these five great organizations with their thousands of members will be able to go to our legislature in the very near future, and demand more money for the education of our mothers and fathers on health subjects.

Last fall the Illinois Federation of Women's Clubs and the Illinois State Medical Society through our committee, decided to run a campaign of pre-school child health examination, and offered a prize of $500 to the club which did the most efficient work. In that great drive many thousands of children received their first physical examination.

Our Committee feel this one drive justified all our work and expense.

Scientific Service Committee.—In addition to what has already been said regarding this subcommittee work, may I state that at our state meeting and at the dental meeting every year in Chicago, this committee not only demonstrates a complete physical examination, but actually does examine all applicants, giving them a complete written report of their physical condition. We are thus spreading the doctrine of periodic health examinations in an effective manner.

In Closing: Along with all our other activities we are assisting our state in combating state medicine in nearly every form. We have allowed no paternalistic movement to gain a foothold in our fair state.

We believe in decentralization of power and that means the county and not the state or nation is the supreme authority on all things local, medical or otherwise. We believe in pre-natal and post-natal education of mothers and best of all we believe in charity liberally bestowed.

REPORT ON WINDOW GLASS SUBSTITUTES

The Council on Physical Therapy publishes a report of work carried out under its auspices, to determine the efficiency of certain window glass substitutes for transmitting the antirachitic rays of sunlight. The transmission of ultra-violet rays was determined both by spectroscopic analysis and by the biologic effects of the transmitted light on the growth of chickens. The following materials were tested: Vitaglass (transparent), Cel-O-Glass, Flex-O-Glass and Corning Glass. Vitaglass and Corning Glass are stated to be true glasses. Celoglass is composed of wire-mesh screen filled with an apparently celluloidinous material. Flexoglass is a thin, fairly loosely woven cloth treated with a paraffin-like substance. The Vitaglass and the Celoglass transmitted a large percentage of the sun's ultra-violet rays, since the chickens reared behind these glasses showed similar development to those which received ultra-violet radiation from the artificial source. Chickens which received the sunlight through Flexoglass did not show the same growth as did the irradiated controls, but did gain more rapidly than those receiving sunlight through window glass. The Corning Glass was received too late for the biologic test, but from the spectroscopic measurements it is evident that this glass is equal to the best of those tests in its ability to transmit the antirachitic rays of the sun. The study leads to the conclusion that there are now available materials for glazing windows which do not possess the fault of window glass in excluding the health-giving rays of sunlight. (Jour. A. M. A., May 14, 1927, p. 1562.)

THE NON-OPERATIVE TREATMENT OF FRACTURES OF THE UPPER EXTREMITY*

FRANK D. DICKSON, M.D.
Kansas City, Mo.

There can be no question as to the importance of the place which the subject of fractures occupies in medical practice today. Industrial expansion, the introduction of the automobile and the speeding up of life generally has resulted in an increase in the number of fracture cases everywhere, and an increase in the number of serious fractures. Furthermore, the functional results of treatment are being considered from a far more critical viewpoint than in the past. The result has been a tremendous outpouring of literature dealing with methods of treating fractures, and advocating the use of this or that procedure as the most advantageous, until the entire field has become confused and beclouded. The greatest need in the fracture problem today is a standardizing of our methods and a weeding out of many individual and unnecessary procedures which serve no purpose but that of complicating our problem of securing the best functional results in the shortest possible time.

The first step in bringing about such a standardization is to definitely separate the treatment of fractures into two main divisions: the non-operative and the operative methods. These two methods are not parallel and cannot be discussed simultaneously. The non-operative treatment of fractures can be successfully carried out by any well-trained physician, who gives it the study and care it demands. The operative treatment of fractures, on the contrary, deserves almost to be considered a specialty; it is difficult manual labor, requires extraordinary care in the preservation of asepsis, and necessitates a special armamentarium possessed by few general hospitals and no general practitioner. Accordingly, in this presentation of the treatment of fractures of the upper extremity, we will consider only the non-operative method of treatment, omitting from the discussion such fractures of this region as are generally admitted to be better adapted to treatment by the operative method.

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

It may be stated that in general there are two standard methods of treatment used in the non-operative management of fractures: (1) the reduction and fixation method; (2) the traction method.

All other methods are variations of these, and may be considered as special methods and not entering into this discussion.

The Reduction and Fixation Method.—This is the traditional method of "setting" the fracture by closed manipulation and retaining it in proper alignment by the immediate application of splints, which immobilize the fracture together with the joints above and below. This method, while fairly efficient in many fractures, has distinct disadvantages. It requires an anesthetic and, as the patient is usually disinclined to submit to this any oftener than is necessary, there is a tendency to let well enough alone if complete reduction is not obtained at the first manipulation. There is the risk of applying splints too tightly with resulting circulatory disturbances. It is difficult, and a times impossible, to maintain the reduction while applying the fixation dressing, and serious displacement may occur even after the splint has been applied, due to muscle spasm and the difficulty of getting splints closely applied. Finally, there is the difficulty of caring for the soft parts and using the physiotherapeutic measures so necessary if early function is to be restored.

The Traction Method.—The use of continuous traction or extension constitutes the basic feature of the traction method. When we consider that given a solution of the continuity of a bone, the resulting displacement is due entirely or largely to muscle pull and muscle spasm (for even when the traumatizing force causes a deformity, the muscle spasm maintains and frequently increases it) it becomes evident why traction is so useful a therapeutic agent. Traction overcomes muscle pull and muscle spasm and secures alignment by exerting a pull in the direction of the normal anatomic lines. Traction aids in securing immobilization by putting under tension the fascia and muscles surrounding the bones. Reduction is brought about gradually without the necessity of anesthetic or traumatizing manipulation. Finally, when properly applied, the extremity is easily accessible for physio-therapeutic measures.

It is our opinion, then, that as a standard

method for the non-operative treatment of fractures in general, traction is the method of choice whenever it can be used. It has been our experience in fractures of the upper extremity that traction gives by far the most satisfactory results, and it is the routine method used in our clinic for all fractures of this region which are considered as being amenable to non-operative treatment with four exceptions, which are: fractures of the lower end of the humerus, fractures of the shaft of the radius, fractures of the head of the radius without displacement, and Colles fractures.

Fig. 1. Clavicular cross, applied.

In the management of fractures in general, there are certain well-founded principles which apply to the treatment of fractures of the upper extremity. A brief consideration of these principles at this point will obviate the necessity of discussing them in connection with the individual fractures and save repetition. Fractures should be splinted at the place of accident and then the patient removed to the hospital or office. This reduces suffering and shock, cuts down undesirable muscle spasm, thus preventing wide separation of fragments and making reduction much less difficult. A careful examination should be made, both physical and x-ray. It is particularly important to note injury to blood vessels, nerves and soft parts, as such complicating injuries are always of great importance. The fracture should be reduced and definite treatment applied at the earliest possible moment, as correction of deformity becomes increasingly difficult with the lapse of time, due to the infiltration of the soft parts with hemorrhage and inflammatory exudate. Whatever form of fixation is used for splinting, frequent observation should be made of the injured part to guard against pressure sores and tight bandaging. Roentgen-ray examination should be made as soon as possible, a check ray made after reduction and repeated at such intervals as may be necessary to be sure that the position is being maintained. All roentgenograms should be made in two planes, and frequently one of the sound side taken for comparison. Massage of a light character should be started as early as possible, within one to two weeks, and passive motion of the most careful type soon afterward. Probably the greatest advantage which results from the use of traction in the treatment of fractures of the upper extremity is that it permits of early massage and movement so that the adjacent joints do not become stiff and the muscles atrophied; as a result a more rapid return of function is possible.

Fig. 2. Abduction-traction apparatus, for fracture of neck of the humerus.

As it is the purpose of this paper to point out as briefly and concisely as possible a standard method of non-operative treatment for each of

he most usual fractures of the upper extremity, ve will not discuss the points of diagnosis and ypes of displacement met with in the individ- ıal fractures. We assume that you are already amiliar with these and feel that a discussion of uch well-established facts is unnecessary. One orm of treatment which has been generally ac- epted as a standard form and which has proven he most useful in our clinic will be described or each fracture. By discussing the treatment f fractures of the upper extremity in this way, t is hoped that confusion may be avoided and erhaps some useful information imparted.

1. Fracture of the clavicle. Traction is used n the management of this fracture in the form

Fig. 3. Abduction aeroplane splint, to supplant traction at he end of three weeks in fracture of neck of the humerus.

f a T-splint or clavicular cross (Fig. 1). This plint properly applied pulls the shoulder up and ack, immobilizes the fragments and permits the erson to be ambulatory and use the arm. In pplying this splint, the cross-bar should be laced well up on the base of the neck, then as he upright bar is brought down against the back, raction upward and backward on the shoulder s secured. This splint should be adjusted and ightened every two or three days and may be discarded at the end of three or four weeks. The use of narrow stockinette as a bandage avoids constriction under the arm and increases the comfort of the patient.

2. Fracture of the surgical neck of the humerus. Traction in abduction with a varying de-

Fig. 4. Abduction-traction apparatus, for fracture of shaft of the humerus above insertion of M. Deltoid.

gree of external rotation, the patient being in bed, is our routine treatment in this fracture. Traction is applied by adhesive strips with the elbow flexed to permit of regulating the external rotation. The arm is suspended from an overhead frame for comfort (Fig 2). At the end of two or three weeks, an aeroplane splint may be substituted and the patient allowed up (Fig. 3).

3. Fracture of the shaft of the humerus. This is best treated by a traction splint of the Jones type (Fig. 4). Traction is made by adhesive strips. When the fracture is below the insertion of the deltoid the addition of a chest support to hold the arm in about 50° of abduction adds materially to its efficiency (Fig. 5). Coaptation splints may be used. Motion may be started in four to five weeks. Injury to the musculospiral nerve occasionally occurs in connection with this fracture.

4. Supracondylar fracture of the humerus. In treating this fracture, manipulation and fixation is the method to be used. In fractures of

the lower end of the humerus, the lower fragment is displaced backward by the fracturing force and the muscle pull. In reducing the fracture, an anesthetic should be given, and the following manipulation carried out: with the elbow extended, traction is made on the forearm, the elbow is then brought into hypertension to disengage the fragments, then with traction continued, the elbow is brought into acute flexion, locking the fragments in place. After reduction, the entire extremity is immobilized in acute flexion in the Jones position. This position may be modified to meet the needs of the individual case. The best method of holding the fracture in this position of acute flexion is by a posterior molded plaster splint (Fig. 6). Circular dressings should be avoided as this fracture is usually associated with considerable hemorrhage and swelling which may compress the veins and nerves at the elbow. As the result of compression of the veins, we have the venous return from the hand and forearm cut off with the production of congestion and infiltration of the muscles. As a result of pressure on the median, ulnar and musculospiral nerves, we get degeneration and interference with the conductivity of the nerves. Volkman's ischemic paralysis, which is such a frequent and disastrous complication of fractures involving this region, is caused by such compression of veins and nerves.

Fig. 5. Abduction-traction splint, for fracture of shaft of the humerus below insertion of M. Deltoid.

5. Fracture of the shaft of the radius. In treatment of a fracture of the shaft of the radius alone, the manipulation and fixation treatment is usually adequate. If the fracture is above the insertion of the pronator radii teres, reduction is made by forcible extension and the fracture splintered with the hand in supination. If the fracture is below the insertion of the pronator radii teres, the reduction is made by forcible extension with the hand put up in pronation. In these fractures, a molded plaster splint is the most efficient form of support. Motion should be started in three weeks.

6. Fracture of both bones of the forearm. It is our experience that traction is by far the most efficient method of treatment for such fractures. The traction is best applied through a traction splint which gets its counter-traction against the lower end of the arm with the elbow bent., Several splints have been devised for this fracture of the forearm by traction, and a very efficient splint may be improvised by bending a heavy piece of wire in the proper manner and fixing it just above the elbow with a few turns of plaster bandage. Traction is secured through adhesive strips tightened by twisting a stick (Spanish Windlass) (Fig. 7).

Fig. 6. Jones position for supra condylar fracture of the humerus.

7. Colles fracture. In this fracture, manipulation and fixation is the method of choice. Re

uction under an anesthetic is usually necessary. The reduction is made by hyperextending the rist to break up any impaction present, then raction and forcible flexion sweeping the hand oward the ulnar side. We are accustomed to x our Colles fractures in acute flexion with ome ulnar deviation, using a molded plaster plint (Fig. 8). In this position, the muscles aid n maintaining reduction. Tearing of the radial lnar ligament with luxation of the lower end f the ulna complicates this fracture and in mak- ng the reduction, care should be taken to secure proper reposition of the ulna, as failure to do o results in impairment and weakness of the vrist. The splint should be worn two to three veeks in Colles fracture, less time (ten days) in old arthritic cases, as stiffness in the wrist and ingers and interference with function results if hese joints are immobilized longer.

8. Metacarpal and phalangeal fractures.—While many of these fractures can be treated with simple palmar splints, especially fractures n the shaft, many of them will do much better with traction. This is the case when the fracture involves the ends of the bones or one of the joints. Traction can be applied by using the various traction splints, although here also a traction splint can be very readily improvised by using a piece of strong wire bent in a U-shape, and attached by plaster above the wrist, traction being secured by attaching elastic bands to the fingers with adhesive (Fig. 9).

We have omitted from discussion a number of fractures of the upper extremity as they should be classed as operative fractures. These fractures include fractures of the olecranon, frac-

Fig. 8. Position of hand (wrist flexion and ulnar deviation) for Colles fracture.

Fig. 7. Traction apparatus for fracture of both bones of the forearm.

Fig. 9. Traction apparatus for phalangeal fractures

tures of the head of the radius with displacement, fractures of both bones of the forearm low down in the wrist within the pronator quadratus muscle and fractures of the carpus. The methods here advised are not given as original but as standard methods and are those which in our experience have been the most reliable and have resulted in securing the best functional results in the shortest possible time, which is the aim of all successful fracture treatment.

CONCLUSIONS

1. The best results will be obtained in the treatment of fractures by selecting a standard method for each fracture and adhering to this method so far as possible.

2. In our experience, traction is the most useful method of treating fractures of the upper extremity, with certain exceptions.

3. Traction is applicable in most of the usual fractures of the upper extremity by using one of the efficient traction splints, which are easily procured or made.

1807 Federal Reserve Bank Bldg.

"IODEX" IN THYROID DISTURBANCES

A pamphlet published by the Pharmacal Advance Press, the house organ of Menley and James, Ltd., the firms that sells Iodex, is devoted to promoting the use of iodex ointment in the treatment of systemic goiter by rubbing ointment into the skin over the thyroid gland twice a day, and also recommending iodex ointment for a number of other pathologic conditions. The Council on Pharmacy and Chemistry has reported that the preparation was practically devoid of free iodine, that its composition was incorrectly stated, that the total iodine content was only about three-fifths of the total amount of iodine claimed, and that therefore its use for securing iodine effects is unwarranted. Almost any intelligent physician knows that the attempt to treat systemic goiter by rubbing such an ointment into the skin over the goiter is preposterous. However, this is but one of many ridiculous statements in the pamphlet mentioned. (Jour. A. M. A. April 30, 1927, p. 1438.)

THE LYE BILL

Congress passed the Federal Caustic Poison Bill, March 2, and the President signed it on the following day. This requires that household packages of lye, ammonia, carbolic acid, oxalic acid, and other caustic substances named in the law be distinctly labelled "Poison," with instructions as to emergency treatment in case of accident. (Jour. A. M. A. March 19, 1927, p. 926.)

VITAL FACTORS IN THE TREATMENT OF CHRONIC MYOCARDIAL INSUFFICIENCY*

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Mr. President and Members of the Hennepin County Medical Society:

In no division of medicine has more knowledge been attained during the past twenty-five years than within the cardiovascular field and in none has such achievement been more lacking in a realization of its possibilities of clinical application.

At no time perhaps since the days of Harvey has a greater divergence of opinion existed between able and honest clinicians and never has so great an addition to sound knowledge and improved technic resulted in so small a gift of added service to the sick.

Obviously, such conflicts of honest opinion and practice as now exist, depend upon vital differences in viewpoint and when examined these are found to cover a wide and diversified field which embraces factors of tradition, habit, terminology, diagnostics, interpretation and therapeutic application.

Tradition leads us to think of chronic heart disease almost wholly in terms of advanced decompensation.

It makes us too often accept "heart-death" in the elderly which is actually premature as merely a "natural process of decay."

Habit fixes our attention too largely upon bruits and the endocarditic lesions.

Terminology substitutes a bastard term such as "chronic myocarditis" for the broader yet more correct one, "myocardial insufficiency."

Faulty conceptions of the size of the normal heart and its great variations lead to multitudinous errors of omission in the detection of morbid enlargement.

An over-emphasis placed upon the impeccability and finality of post-mortem findings dims the true clinical conception which demands that impaired function be held always in the foreground as a spur to action.

The failure to demand early diagnosis, together with a morbid fear of the "cardiac neurosis,"

*Paper delivered by invitation to the Hennepin County Medical Society, Minneapolis, Oct. 4, 1926.

leads to wholesale neglect and a false interpretation which places the stigma of "neurosis" upon a host of sufferers from genuine, if masked, cardiac inadequacy.

Early diagnosis failing and a competent conception of myocardial reserve, its peculiarities and therapeutic possibilities, still generally lacking, diagnosis and treatment must be and are, laggard and halting.

Cardiopaths, broadly speaking, fall into two chief age groups. The one covers the first three or four decades of life, embraces congenital lesions and shows a heavy predominance of frank, primary, endocarditic defects.

The second group, *with which this paper deals,* covers the later stages of persisting organic endocarditic lesions, but comparatively few of recent origin, though non-organic mitral defect is common and pronounced. Its chief and most interesting components are the non-endocarditic lesions and, especially, that great group of myocardial insufficiencies which we term, falsely for the most part, "chronic myocarditis." These we know include in actual practice myocardial degeneration of various types and degrees and of most mixed and indeterminate character as well as many failing hearts showing at autopsy neither degeneration nor inflammation. The so-called "silent heart," deadly and most misleading, finds a prominent place in this age group and we must add that variable factor, coronary sclerosis, and most of the cases of acquired luetic disease of the heart and aorta.

Both age groups include the many cases of myocardial exhaustion or inadequacy, with or without distinct pathologic changes which occur with such frequency in the congenitally underpowered and, usually, toxic hearts of large numbers of visceroptotic individuals. For these the snappy and convenient term "effort syndrome" has proven calamitous in robbing them of their right to consideration as heart patients, for the most part susceptible of great improvement or actual cure.

Of late, there has been a tendency to multiply greatly the number of cases supposedly entitled to be called "hypertension hearts," but the correctness of this procedure may be questioned. Such a clinical group has long been recognized as genuine but it is probable that only a relatively small proportion of inadequate hearts associated with arterial hypertension owe their insufficiency primarily to that condition even though both may be the result of the same toxic factor.

It is difficult to conceive of the chronic non-endocarditic heart lesions of middle and advanced age as anything other than end-results of toxemias.

Varying grades of increased blood pressure would be anticipated as a late manifestation and associated causes must be given their full value. Even in advanced, decidedly decompensated cases, not more than 40 per cent of the readings encountered are sufficiently high to constitute even a major contributory element.

Decompensation itself tends to heighten arterial pressure in many instances and, quite generally, the application of measures to rest the heart and strengthen the myocardium reduce more or less sharply the height of the readings.

The members of the first main age-group, for the most part, are frank, noisy and easily recognized and identified, offering upon the autopsy table full opportunity for a satisfactory accord between pathologist and clinician.

Those of the second group are of a far different character in large part and instead of serving to demonstrate the *optimum* of accord between pathologist and clinician, tend rather to prove how far apart two earnest and skilful men may be at times, when one's chief concern is the living body and that of the other the presentation of a concrete cause of death at the autopsy.

The pathologist deals with demonstrable concrete changes evidenced in dead tissue. *The clinician, if himself alive to his responsibilities, deals primarily and chiefly with myocardial defect as evidenced by inadequacy of function.*

As Doctor Henry Christian wrote a few years ago, relative to this topic, the clinician often finds that he and the pathologist "do not speak the same language." A heart which certainly killed its possessor is not of necessity the seat of such demonstrable, specific and concrete changes as are adequate to explain the death. The primary, chief and vital interest of patient and physician alike is bound up in the condition of the heart-muscle as reflected in a failing myocardial reserve.

A man may have an auto-audible aortic regurgitation and a double mitral lesion and yet stoke a locomotive for years without serious em-

barrassment. On the other hand, one with no bruit, and a heart sub-normal in size as judged by standards still regrettably prevailing, may die a "heart-death" which defies specific pathologic explanation.

The more extreme examples of the great visceroptotic group of our people never acquire a myocardial reserve sufficient to equip them for a strenuous life. A larger number of the same group are living always under the handicap or threat of a narrowed myocardial reserve precipitable by any one of many disease toxins or any thing producing a sharp drop in their nutrition.

It is a safe, sound and logical assumption that acquired chronic myocardial insufficiencies, whatever their specific clinical and pathologic association, are, in general, the result of repeated toxemias which may or may not have left a mark recognizable at autopsy. It is certain that apart from the primary phases of actual endocarditis proper, *decompensation is developed very gradually.*

It is a deplorable fact that at present, with rare exceptions, we detect non-endocarditic myocardial deficiencies of the elder group only when far advanced or even only when death is impending.

Unfortunately or not, proper service to the heart-case necessitates oftentimes the acceptance of *subjective symptoms* as adequate testimony of myocardial insufficiency even in the absence of all gross objective signs. *Here lies a risk of error, real, yet trivial when contrasted with the tragedies of omission at present chargeable to belated recognition.*

Indeed, we have faced and surmounted the same problem in connection with the campaign against pulmonary tuberculosis and the net result of that undertaking despite the inevitable formation of groups of imaginary cases and the occasional mistakes inseparable from extra-early diagnosis, has been one of the greatest achievements of medicine.

That point of view which leads an able and sincere clinician to assert that most heart disease is "imaginary," does not advance the cause of the genuine cardiopath and too great a fear of "cardiac neurosis" certainly invites and, indeed, makes inevitable, a host of diagnostic errors and thereapeutic omissions.

It is high time that the cardiopath was given his chance, as he would have been long ago, had his ailment been contagious.

As affecting either the individual patient or group-prevention, the earliest possible recognition, retardation and prompt and effective management are as important in myocardial insufficiencies as in pulmonary tuberculosis.

With respect to prolongation of life, a timely and efficient therapeutic initiative based upon the earlier recognition and intelligent evaluation of minor signs and symptoms, is as important in the one condition as in the other.

The heart is the body's engine—the most vital and important motor in the world—yet the only one whose impairments and age-defects usually are neglected until cessation of function is not only foreshadowed but threatened or actually at hand.

That early diagnosis which is the essential prerequisite of effective and timely therapy depends basically upon a knowledge of myocardial reserve and the clinical evidence of its impairments, not upon the recognition of gross decompensatory symptoms.

Reserve is the quality which gives to the heart its resiliency. It is the attribute which is first affected by damaging tonus-defects and these in turn, whether attended or unattended by gross demonstrable dilatation, are the first cardiac manifestations of a toxemia, inflammation, or advancing degeneration.

In the last analysis, therefore, it is the evidence of impaired reserve which we must detect in making a timely diagnosis and the maximal rehabilitation of that reserve which we must attempt to achieve in direction or treatment.

In the cardiovascular apparatus we have something infinitely delicate yet marvelously adapted to endure punishment and for long to overcome handicaps gradually induced. Over-loads, excessive local demands, or super-abundant supply, are promptly and adequately met by the harmonious interaction of the medullary centers, the arterial system and the heart itself. Even the vital intrinsic circulation of the myocardium, tenfold that of the skeletal muscle, is under exquisite compensatory regulation.

Assume the existence of a damaging toxemia with or without inflammatory or degenerative changes and you have still to consider the tremendous (thirteen-fold) reserve which for long

may be drawn upon, the ease with which burdens of involved areas may be transferred and equalized, and the tremendous aid afforded by vaso-motor control both intrinsic and extrinsic.

It is evident that none of the grosser symptims of decompensation need be obvious until the lapse of many months or years and, sometimes never before death, but evident, nevertheless, that long before this time periods of detectable lessened reserve and harmful overstrain must inevitably occur.

This means that despite hypertrophy, if that be present, the field of symptomless, painless response, to unusual or even to habitual effort, is narrowed to the point *where recognizable symptoms must arise.* It is logical and inevitable that these primary symptoms of insufficiency of the heart-muscle will be manifested first, chiefly or wholly, in *subjective* discomfort due to *tonus-deficiencies, with or without associated demonstrable dilatation of the heart.*

The tonicity of heart-muscle is a passive but defensive contraction resisting over-distension in diastole and permitting no "slack" that must be taken up or "slip" to be overcome by the heart-muscle in its recurring active contraction. It insures a good "footing" and a firm "take-off" for effective, forceful, rhythmic systoles.

Tonus-deficiencies of a symptom-producing grade but lacking demonstrable dilatation are extremely common, especially in the drop-heart and its variants, to the vital clinical importance of which I directed attention over a decade ago. Indeed, most urgent symptoms of heart failure may arise in the absence of any readily demonstrable gross change in heart outline.

So also in greatly enlarged hearts with evidence of profound decompensation, restoration of reserve, maximal for the individual case, may be unaccompanied by any marked degree of heart shrinkage, or, on the other hand, may be associated with a *great* reduction in the heart diameters.

One hears doubt expressed as to the possibility of a chronically dilated hypertrophied heart materially changing its outline under treatment. The accompanying illustrations prove that many such hearts can, and often do, undergo a remarkable shrinkage.

In the opinion of the writer tonus-deficiency is the chief, basic source of heart symptoms, subjective and objective, apart from the *bruits* of endocarditis, pericarditis, congenital lesions and certain of the mechanical vascular phenomena, as in aortic regurgitation.

Among the conditions affecting tonus are:

1. *Circulating toxins as in the case of acute and chronic infectious disease, chronic nephritis, hidden foci of infection, acidosis or the ingestion of certain poisons, organic or inorganic.*
2. *States of decided or profound anemia.*
3. *Other conditions associated with decided nutritional disturbances, especially in the viscer-optotic group.*
4. *Degenerative and inflammatory disease of the heart-muscle.*
5. *Impairment of the intrinsic circulation of the heart.*
6. *Myocardial overstrain, isolated, continuous or intermittent in the presence of any of the factors elsewhere stated.*
7. *Emotional crises.*
8. *In weakened or unstable hearts, excessive heat or this combined with vitiated air, hot baths, or prolonged sweating.*
9. *Unduly prolonged confinement to bed.*
10. *Surgical shock.*
11. *The over-administration of digitalis.*

The sthenic type of heart resists adverse influences far better than the asthenic type and to what degree purely vascular disturbances outside the heart react upon myocardial tonicity we do not know, but cannot doubt their potency as contributing factors.

In the already diseased or congenitally inadequate heart periods of overstrain are very common. Any new infection, any relighting of an existing, primarily causative, septic focus, any decided advance in an already established inflammatory or degenerative process, may affect to a greater or less degree myocardial tonus and, consequently, the reserve power of that heart. Many or most even of these impairments will be temporary and trivial, but from time to time those of a severe grade or greater persistence occur, recovery is less and less prompt and complete and any existing pathological process is accelerated or a primary congenital weakness or inadequacy intensified.

The teleoroentgenograms here shown, prove the relatively small size of the average normal heart, the wide variability in normal heart diam-

eters, the astonishing response of heart outline to properly controlled and regulated treatment in some instances, the recovery of heart strength with little or no change in outline in others, the instability of re-established reserve often encountered in myocardial insufficiency and its remarkable stability in others.

To successfully diagnose and treat myocardial inadequacy in its chronic and established form the free use of roentgenography is absolutely essential. For years every suspected heart-case coming to my office has been filmed. Therapeutic results with respect to diameters have been determined and the case checked as regularly and systematically as conditions permitted by the same means.

All pictures have been taken at the end of inspiration and the accuracy of technic attainable for purposes of comparison is illustrated by the three consecutive exposures of the same heart shown in this article which yield a diameter variation of but one millimeter. In practice, however, we disregard all variations which do not reach or exceed five millimeters.

One must know the outline and dimensions of a suspect heart. Our old landmarks, the nipple and the mid-clavicular line have become practically worthless and the P. M. I. is at best but a rough indicator.

In the markedly gastroptotic person, male or female, one is unlikely to find a normal heart diameter exceeding 11 cm. at the end of inspiration and the measurements of 8, 9, 10 cm. are quite commonly encountered with definite symptoms of decompensation (misnamed "effort syndrome"). Sthenic robust individuals lacking gastroptosis do not show in this phase of respiration heart diameters exceeding 13.5 cm. unless that organ be pathologically enlarged, though at the time and over months or years it may be fully compensated and wholly symptomless.

The known pecularities of outline associated with various types of heart lesions are valuable as is the comparative diameter of the heart and chest (See teleoroentgenograms).

In my office we *very roughly* determine from the six-foot film the ratio of the diameter of the heart to the internal chest diameter at the end of inspiration. If in a sthenic individual with suggestive symptoms we find the ratio between the two diameters greatly exceeding 40 per cent, or, if in a decidedly gastroptotic subject, it exceeds grossly 33 or 34 per cent, we feel morally certain that we are dealing with an enlarged heart. It is a useful but coarse method.

Accurate percussion is extremely important when teleoroentgenograms are unavailable and is obtainable only by modern technic and, as I pointed out several years ago, with the patient erect or, at least, in the sitting posture. The old flat-finger method is well-nigh useless for correct determinations.

A well-taken case history must be had always and a knowledge of the great number and diversity of symptoms, subjective and objective of cardiac origin is indispensable.

One of the most helpful of early symptoms is *bilateral and equal pretibial edema,* often only diurnal as pointed out by me several years ago.

Edema.—This when pronounced in advanced cases, is the most strikingly objective of the commoner gross symptoms and the most marked of any save pronounced dyspnea or profound cyanosis. *In its slighter and earlier forms it is very generally overlooked, for, contrary to the accepted belief, the writer finds that in such instances it is manifest earliest over the upper- or mid-leg and wholly absent at the ankle. The patient carrying it in this deceptive form is often unaware of its presence and denies its possession. It may exist for years before the grosser and graver symptoms of decompensation manifest themselves,* but is a sign of cardinal importance, serving often times as a valuable diagnostic aid in doubtful cases and a useful therapeutic indicator in patients under observation.

Cardinal Subjective Symptoms.—Certain leading subjective symptoms demand brief mention. In every instance the presence of other etiologic factors must be considered, for the heart weakness present may be a secondary development. Under thorough examination and a complete anamesis the danger of error in interpretation is relatively slight and, furthermore, *the need and value of attention to the heart is often underestimated in secondary associated myocardial insufficiency.*

Fatigability.—One of the two most important, if not the chief, of all subjective symptoms encountered in this elderly group of insufficient hearts is an inability, gradually, rapidly or suddenly induced, to perform without conscious ex-

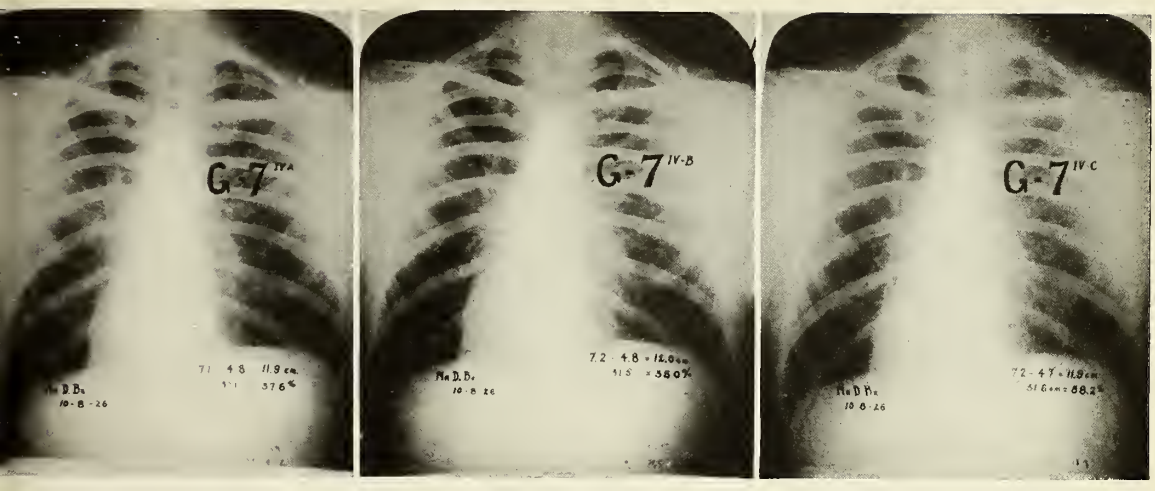
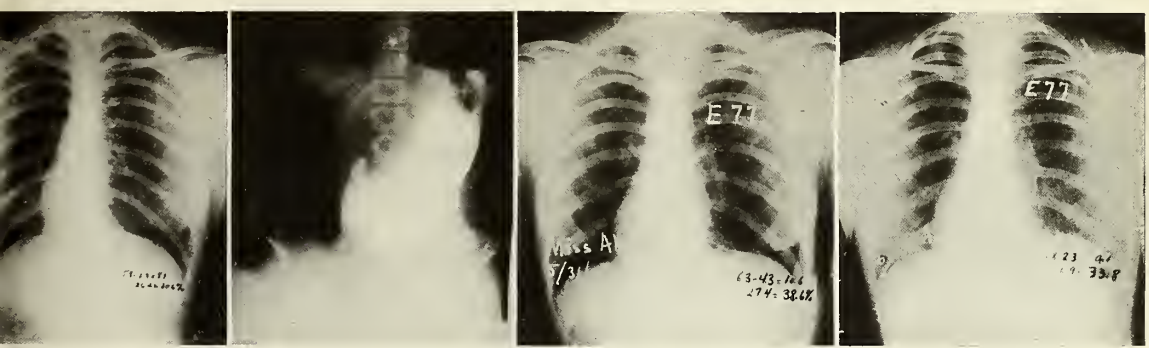


Fig. 1. Three consecutive plates taken to demonstrate accuracy of technic. Note very small (1 millimeter) difference in eter of the three plates.



a *b* *c* *d*

Fig. 2. *a*, Toxic drop heart. Recent hyperthyroidism. Reserve still impaired but improving from week to week. Metab- n normal. Tachycardia moderate. Note shot marking nipple. Note fall of midclavicular line. Heart diameter could be led by dilatation and yet be called normal in size under prevailing methods.

b, Stomach, same case as *a*, gastroptosis marked. Usual finding. "Effort syndrome" type.

c, Masked dilatation. Tonus impairment in excessively nervous young woman. Chief complaint epigastric pain of eighteen ths' duration initiated by work or study. Has abnormal fatigability and oppressed breathing when walking in wind. Soft olic bruit at apex of so-called "accidental" or "functional" type—not transmitted to axilla or back. Note where midclavicular would fall, far outside left border. Total transverse diameter only 10.6 cm. Previous diagnosis "cardiac neurosis."

d, Same patient as in *c* after short ambulatory treatment. Total transverse diameter 9.1 cm. Reduction in transverse 1.5 cm. loss of right border bulge and assumption of drop heart outline. Patient freed from all subjective symptoms. Heart un- tedly still abnormally large. Note where midclavicular line falls. Type of case greatly neglected. Genuine dilatation and mpensation masked by small heart and pronounced "nervous" symptoms.

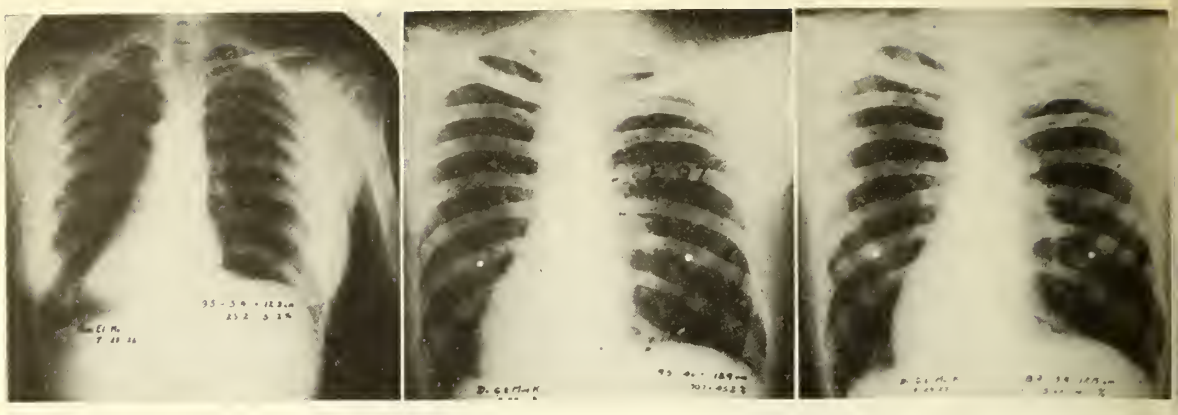
effort or fatigue, usual and everyday tasks merly easily dispatched.

Aside from the undue or excessive fatigue or ual exhaustion which constitutes the main mptom, there are many interesting and im- tant variants. Such are—"heaviness" of the ; recurring, usually transitory, instability of ; the sensation of opposed advance in walk- *i.e.*, "wading" sensation. Transitory numb- s and tingling of the extremities is especially mon in hypertension cases.

A permanent sense of fatigue such as is mentioned in connection with one of the films shown, is a rather common symptom of decided value.

Dyspnea on Exertion.—This is a symptom of great importance, but must be carefully scrutinized always both with respect to the existence of etiologic factors other than the heart and the question as to whether the respiratory discomfort really is induced with undue readiness or by a normally insufficient cause.

It is interesting to note that active dyspnea is

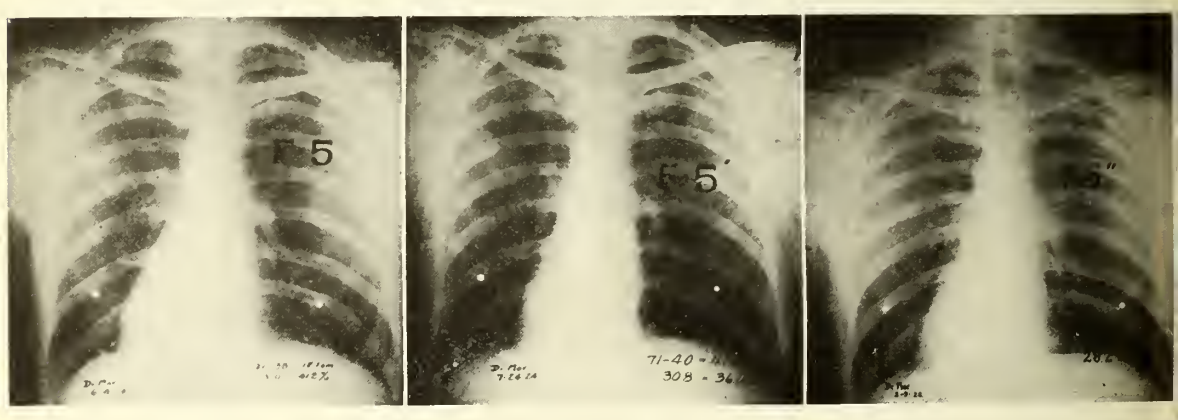


a *b* *c*

Fig. 3. *a*, Toxic myocardial insufficiency and marked cardiac enlargement. Scarlet fever, diphtheria and frequent tonsillitis in childhood. Influenza four years ago. Pyorrhea and septic tonsils now. Weakness, dyspnea on exertion and "indigestion" for past year since injection treatment for hemorrhoids. Precordial oppression. Highly neurotic. Undergoing hospital regime and eradication of foci. No murmurs. Wholly "silent heart." Type of case usually deprived of merited cardiac therapy and management through diagnosis of cardiac neurosis. Heart pathologically enlarged both to right and left.

b, Adult male. So-called "effort syndrome." Masked dilatation of drop heart. Symptoms of defective tonus and myocardial exhaustion plus troublesome precordial pain and palpitation. Regarded as neurotic. Total diameter 13.9 cm. Question of enlargement or non-enlargement. Patient had been told repeatedly that heart was normal.

c, Same patient as in *b* after five days' complete rest plus digitalis. Total heart diameter 12.8 cm. Reduction 1.1 cm. Could not take treatment. Heart will resume old outline in a few days. Reduced diameter and tonus improvement not being "fixed" by systematic regimen.



a *b* *c*

Fig. 4. *a*, Cardiac dilatation and toxic myocardial insufficiency with aortic relaxation in visceroptotic male of 31. Complained of lack of endurance, fatigue and fatigability, palpitation, failure to regain strength after thyroidectomy 6 months ago. Diameter 12.9 cm. First symptoms precordial pain radiating to left scapula and left arm and fatigability 18 months ago. Blood pressure 108/66. Faint aortic diastolic murmur. Basal metabolism before operation said to have been +5, after operation —7.

b, Same patient as in *a*, 4 months later, after hospital rebuilding regime. Submucous resection and exenteration of left ethmoid cells 3 months ago. Walking 4 miles daily and free from symptoms. Total diameter, 11.1 cm. Reduction 1.8 cm.

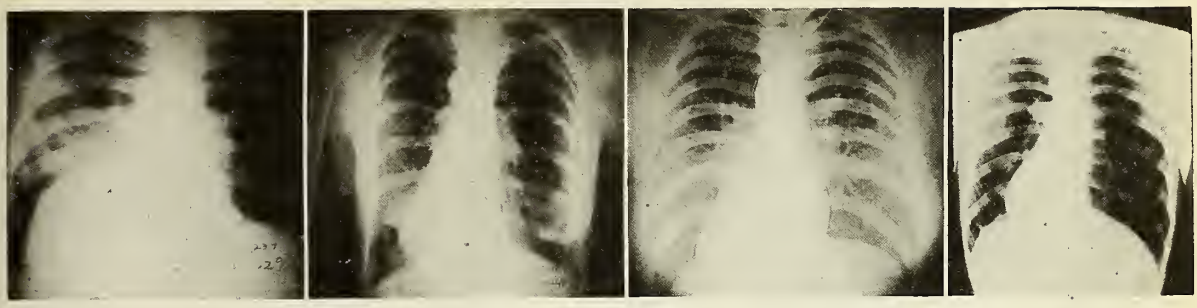
c, Same case 19 months later. Patient has carried on practice of dentistry for past 13 months without symptoms. Total diameter 11.5 cm.

often lacking during the act responsible for its appearance but marked, immediately thereafter.

Abnormal inability to hold the breath is a symptom of some importance and the peculiar subjective sense of dyspnea, too often ascribed to hysteria, is a symptom commonly undervalued or wrongly interpreted.

Gastro-intestinal Symptoms.—An astonishing number of "dyspepsias" disappear under rest and digitalis and flatulence is common as an associated symptom of myocardial insufficiency in this group.

Precordial discomfort in the presence of gastric distension is peculiarly and suggestively frequent in elderly heart patients. Apparently an insufficient heart is often irritable and especially protestant against crowding and displacement. The symptom becomes a suggestive



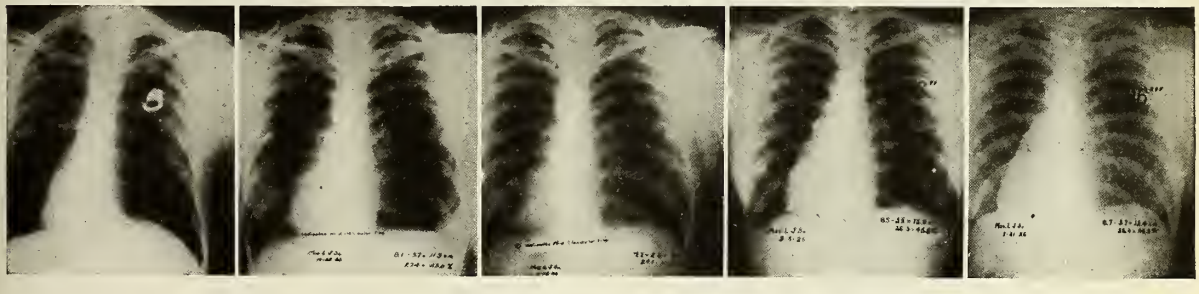
a *b* *c* *d*

Fig. 5. *a*, Silent decompensation. Case of extreme, apparently terminal, decompensation; exertion dyspnea, orthopnea, general edema with extreme ascites, hepatic engorgement and passive congestion of the kidneys. Abandoned as hopeless by attending physicians. Prompt response to rest, stimulation and systematic retraining. May live in comfort for years. Heart dimensions are M. L. 16.3 cm., M. R. 7.4 cm., total 23.7 cm. This case illustrates a widespread and deadly pessimism with respect to advanced heart cases, no less fatal than the optimism which leads to an unjustified dependence upon nature and robs the cardiopath of treatment during the amenable stages of his ailment. A surprising number prove responsive to systematic treatment and stable under subsequent check and direction. Marked hypertrophy and dilatation accompanied by gross symptoms of decompensation.

b, Silent decompensation. Compare this heart with that shown in *a*. The total transverse diameter is but 10.8 cm. yet the heart is greatly enlarged. Dyspnea on exertion, profound fatigability, orthopnea and intervals of Cheyne-Stokes breathing were present. A toxic exhausted myocardium in the heart of a congenital asthenic. Improvement will be slow; the retraining of the heart after removal of existing sources of toxemia will require several months, and probably some reserve limitation will persist. The patient nevertheless may be comfortable, happy and able to lead a practically normal life. This is the type of heart almost universally unrecognized clinically at the present time. Typical example of so-called "effort syndrome" heart, a most unfortunate term.

c, Aortic and double mitral of long standing imperfect compensation. Typical textbook outline. Compare diameter with that in *d*. Heart diameter 14.5 cm.

d, Patient 29 years of age. Diameter 9.1 cm. + 3.2 cm. = 12.3 cm. (42 per cent of chest). Heart disease 10 years. Double mitral and double aortic. Dyspnea on exertion. No edema. Diastolic thrill in aortic region and presystolic in mitral region. Excessively limited reserve. Not out of own yard in ten years.



a *b* *c* *d* *e*

Fig. 6. *a*, Aortic regurgitation. Classical signs, marked decompensation. Death a few weeks later. Diameter 12 cm. Note drop type of heart and astonishingly small diameter.

b, Typical case of dilated drop heart with marked decompensation and decided dilatation. Total transverse diameter is but 11.8 cm. Left border within midclavicular line. Soft apex bruit of so-called "accidental" type. Dilatation definitely suggested by low position of stomach. Such hearts are constantly passed as normal.

c, Same case as *b* after hospital treatment and full recovery of compensation. Total diameter 9.9 cm. Reduction 1.9 cm. Disappearance of definable right heart border and assumption of typical drop heart outline.

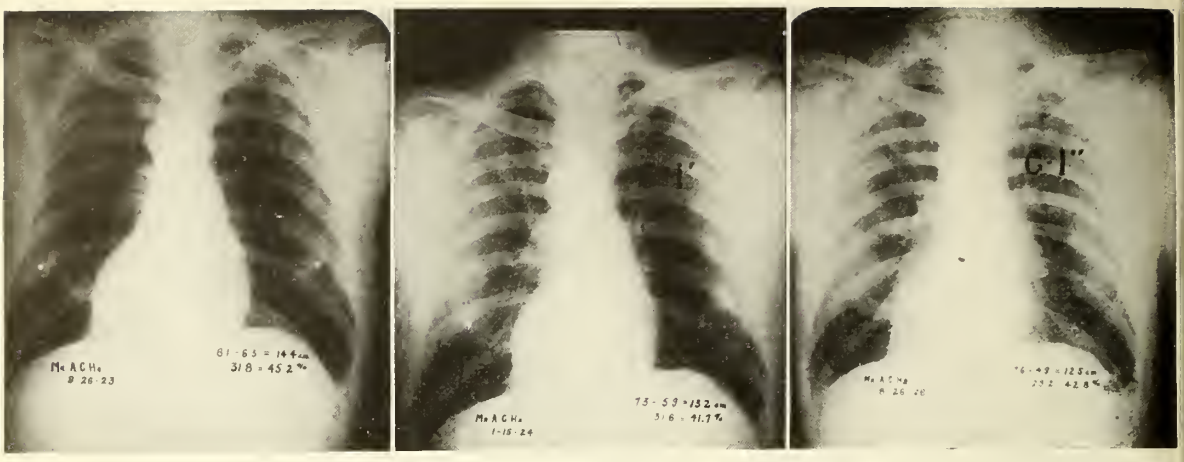
d, Same patient. Decided enlargement of cardiac diameter by 2.1 cm., presumably a sequence of recent pregnancy and delivery. Slight recurrence of bilateral edema.

e, Same patient. Still maintaining increased diameter but free from all symptoms. Note this fact, that pathologic enlargement has not induced actual decompensation in the retrained heart.

one in the light of the fact that the normal heart makes little complaint even if abdominal distension be marked.

Precordial Pain and Distress.—This topic is too large to permit anything approaching adequate discussion. Pain of cardiac origin may vary from a mere sense of discomfort, weight, crowding, or oppression, to the vice-like, gripping of major angina pectoris. It may be, and usually is, precordial, but is often epigastric and may radiate to the arms, especially the left, the jaws and even to the entire upper abdominal zones.

Pain in the arms, unrelated to the occurrence of precordial angina, is a relatively common



a *b* *c*

Fig. 7. *a*, Decidedly enlarged heart (right and left) of elderly well developed male with precordial pain, easy fatigability, and dyspnea on exertion. Had several attacks of typical angina pectoris in past year. Frequent respiratory infections. Moderate hypertension. 165/90. Slight bilateral edema. Note the apex is within the midclavicular line despite the decided enlargement and marked decompensation.

b, Same case after systematic cardiac rebuilding regime with relief of symptoms. Note reduction of 1.2 cm. in cardiac diameter. Heart apex is far within midclavicular line. Reduction of both right and left borders.

c, Following repeated minor overstrains, physical and emotional, associated with slight reaccession of symptoms and slight cardiac enlargement, a second hospital regime was advised, resulting in the acquisition of a further marked improvement in endurance and heart balance, and a further reduction in cardiac diameter which has been maintained. Total period of maintained improvement, four years. Total reduction 2.1 cm. Blood pressure unchanged.

a *b* *c*

Fig. 8. *a*, Moderate cardiac enlargement in middle aged female. Rheumatic mitral insufficiency with decompensation. Occasional dyspnea since rheumatism at 14. Precordial pain, increased dyspnea, nausea and vomiting of 5 months' duration. Surgeons refused to operate for uterine fibroids because of condition of heart. P. M. I. palpable at that time 14.0 cm. to left of median line. Evident wide dilatation present. Plate taken 2 months after entrance to hospital when patient had gained sufficient strength to undergo x-ray.

b, Four months later. Additional diminution of cardiac diameter 2.4 cm. after necessary long, tedious cardiac rebuilding regime. Free from distress. Tonsillectomy advised and successfully performed.

c, Cardiac diameter increased 1.8 cm. but patient has felt fine. Free from symptoms. Reporting back at 3 months' intervals

symptom as a delayed sign of reaction to overstrain in patients of the elder group with decided decompensation.

Drowsiness and Disturbances of Sleep.—Day drowsiness, persistently recurrent and often most embarrassing, is a not infrequent symptom of myocardial inadequacy, apart from changes in the vascular system. Allied to this is the loss or impairment of the power of sustained mental concentration or the occurrence of actual mental confusion.

Early waking, unrefreshing sleep, disturbing dreams and the like, are common symptoms, especially in the elderly and, like vertigo, may occur

a *b* *c* *d*

Fig. 9. *a*, Dilated drop heart with toxic insufficiency in male of 47. Collapsed during nasal operation and placed immediately in our care 3 months before it was possible to take this plate. Had had dyspnea on exertion, fatigue, precordial pain, extrasystolic arrhythmia for one year preceding his report for operation. Congestion of lung base on right. Heart tones almost inaudible. Blood pressure 96/65. Percussion dullness 15.5. Soft apical systolic bruit not transmitted, "accidental type," practically silent heart. Relatively common and treacherous type. Septic tonsils. Total diameter at this time 13 cm.

b, Same case. Diameter 3 months before this picture was taken, 13 cm. Had pneumonia 2 months ago. In bed for one month. Now feels fully recovered from pneumonia. Diameter now 13.3 cm. Remnant of enlargement in right heart an interesting feature together with prompt recovery.

c, Toxic myocardial insufficiency. Acute cardiac overstrain and collapse 8 months ago with marked cardiac enlargement. Prior to collapse the patient had been continuously tired for 2 years. Rheumatism at 14. Diameter 15.9 cm.

d, Same case as *c*, 27 months later. Hospital care impossible. Home treatment under difficult conditions. Heart shrinkage 2.9 cm. Going to office and walking a mile daily. Slight precordial discomfort persists. At this date the heart maintains diminished diameter and is free from symptoms. Total diameter 13 cm.

n the absence of marked changes in the cerebral lood vessels.

It is impossible, even with so generous an llotment of time, to discuss disturbances of ulse rate and rhythm further than to say that, n general, these are under-rated as parts of the linical picture in the *elderly* group.

The tendency to classify as "functional" or accidental" all minor apical heart murmurs, unssociated with a classical transmission or symoms of gross heart enlargement, is especially nfortunate for the cardiopath of the elderly roup whose bruits are so often imperfect even hen not wholly absent and the failure to exirpate when possible all sources of chronic or ecurrent toxemia, is a potent source of failure n the treatment of all chronic decompensated eart lesions.

Our unfilled obligation lies chiefly, but not holly, in the direction of earlier diagnosis, for e have much to learn with respect to the mangement of myocardial insufficiency after its dection.

Restoration of impaired reserve may demand nly wise counsel and the proper regulation of abits, physical and mental exertion and diet.

Ambulatory treatment under proper direction nd regular observation may be sufficient in inor insufficiencies, or, a period of absolute est may be indispensable, succeeded by a re-

a *b*

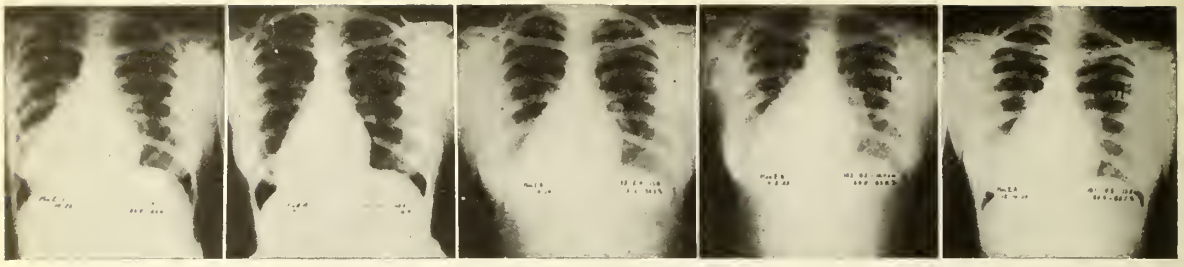
Fig. 10. *a*, Silent heart. Patient, 59 year old male with profound decompensation. Rapid fibrillation thought initiated by physical overstrain 2 weeks previously. Acute glaucoma. Stupor alternating hallucinations. Apparently terminal case. Heart practically silent. Total transverse diameter on admission 18.3 cm.

b, Same case after hospital rebuilding regime. Diameter 16 cm. Reduction 2.3 cm. The normal rhythm was re-established and the patient was free from all symptoms. For nearly 4 years now he has been putting in full time in his medical practice and was still free from symptoms in the spring of 1926. It was impossible to keep him under proper observation. Serious breakdown reported later.

sumption of physical activity most carefully graduated and so planned as to make each added increment of effort a stimulous to myocardial tonus.

A common error is that represented by an over-long enforced period of absolute rest followed by too abrupt a resumption of exercise.

Accretions to reserve are gradually attained and oftentimes peculiarly unstable. To fix them



a *b* *c* *d* *e*

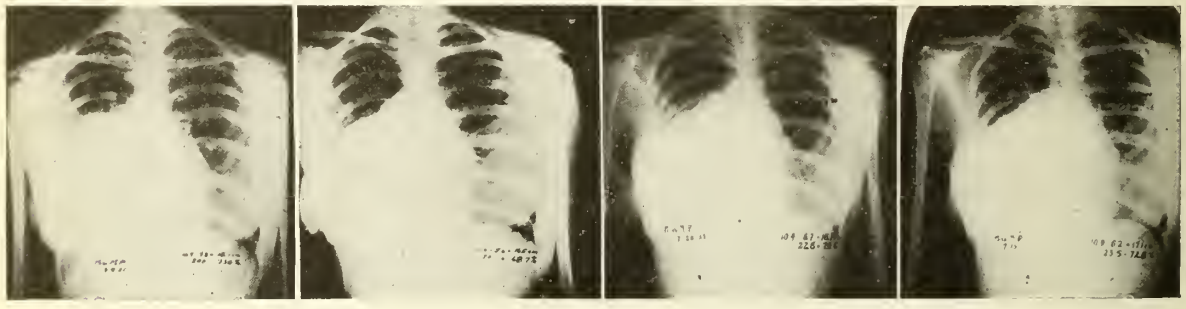
Fig. 11. *a*, Symptoms of decided decompensation for 12 years. Apparently a terminal case on admission. General anasarca orthopnea, etc. Double mitral and regurgitant tricuspid lesions. No fibrillation shown by electrocardiograph. Total heart diameter on admission 17.4 cm.

b, Same case. On discharge 14.3 cm. Total shrinkage 3.1 cm. affecting whole heart. Patient discharged free from all subjective symptoms. Walking 4.5 miles and climbing 105 stairs daily. Residual diameter represents a markedly hypertrophied drop heart with good tonicity and adaptive dilatation. Left border at midsternal line. Home conditions most unfavorable on account of "hard times."

c, Same case two and one-half years later. Delivery of full term child 4 months previous. Cardiac irregularity for one and a half days in third week post partum (probably fibrillation). Note increase of 1.3 cm. in cardiac diameter as would be expected.

d, Same case 7 months later. Three weeks ago the patient had severe influenza which precipitated auricular fibrillation. Heart diameter increased 0.8 cm. over previous film.

e, Same case 7 months later. After 3 months of hospital treatment. Entered with cardiac diameter of 16.5 cm. Reduction 0.9 cm., still fibrillating. Recently health reported as good.



a *b* *c* *d*

Fig. 12. *a*, Hypertrophied and dilated drop heart with chronic valvular disease. Young woman aged 24, invalided by chronic decompensation since age of 12. Rapid fibrillation of long standing present on admission to hospital. Decompensation extreme. Double mitral lesion with tricuspid leakage and probable pleuro-pericardial adhesions. Heart diameter 18 cm.

b, Same case after period of absolute rest followed by gradual and strictly regulated retraining and rehabilitation of heart muscle through graduated and progressively increasing exercise. Free from all subjective symptoms. Total heart diameter 16.5 cm. Reduction 1.5 cm. Shrinkage wholly in right heart. Rhythm almost normal, rate moderate. Slow fibrillation revealed by electrocardiograph. Walking 4 and 5 miles and climbing 150 stairs daily. Improvement continues.

c, Three years later. Living a moderately active life with the avoidance of severe fatigue. Able to travel widely. Slight further reduction in cardiac diameter.

d, One year later. Leading a practically normal life. Feeling well and helping with light household duties. Heart diameter increased 1.0 cm. Caution given. Spent summer on Atlantic coast. Cerebral embolism at time of return. Now recovering. Two years later completely recovered.

one must avoid over a long period, in many instances, any effort associated with or followed by a decided consciousness of fatigue.

"Trying out" a patient is often a most disastrous procedure.

In and of itself the mere presence of a cardiac *bruit* or arrhythmia does not establish the need of active treatment.

The loudest of murmurs may be associated with full compensation and arrhythmias must be identified and dealt with according to their individual nature and their effect upon the heart and sometimes the *psyche* of their possessors.

It is a far cry from the harmless "sinus arrythmia" to "fibrillation," "flutter" and "heart-block."

At this time we are recognizing but a tiny fraction of the minor decompensations and dila-

tations of this elderly cardiac group which are danger signals and forerunners of calamity.

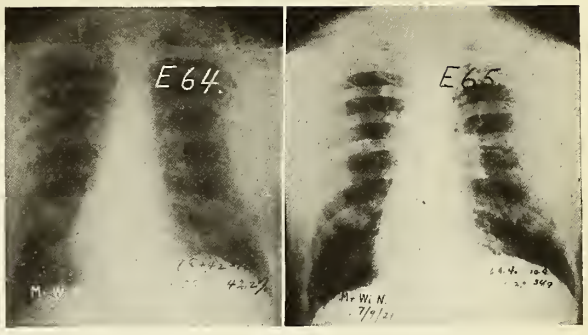
Our plain duty, at present unfulfilled, is the earlier detection of reserve impairment, the removal of existing sources of myocardial toxemia and the timely, rational and maximal correction of remediable myocardial inadequacy.

DISCUSSION

Dr. G. D. Head: I wish to express my appreciation of again hearing Dr. Greene in this to him familiar field which he knows so well. I want to emphasize, as he has done in two or three places in his address, the importance of our profession more clearly recognizing this symptom-complex in a very baffling type of cardiac symptomatology. Sometimes I feel, in the study of the so-called neurasthenic type of individual which is so well represented in a group of these cases, that it would be much better for the profession had we never used or recognized such a term as "neurasthenia." I feel that neurasthenia as a diagnosis leads to so many incorrect conceptions upon the part of the clinician. It offers an opportunity of making a diagnosis without making it. Neurasthenia is too loose a term to be used in diagnostic nomenclature among scientific men. It should be abandoned.

I think that Dr. Greene, particularly, has taught many of us the very great importance of recognizing this exhaustion type of clinical syndrome which is so closely allied to and associated with this form of myocardial insufficiency which he has so well demonstrated for us tonight.

I could talk more about many of the phases which I am particularly interested in, but I feel I want only to express my appreciation of this splendid presentation.



a *b*

Fig. 13. *a*, Silent heart. Middle aged business man, congenital asthenic type. Former pulmonary tuberculosis long (30 years) arrested. Seen in four typical attacks of acute dilatation. Two followed physical overstrain and two major surgical operations. The latter two associated with wide dilatation and extreme, apparently terminal, myocardial weakness. Typical "soldier's" heart in civilian, "effort syndrome." This plate taken when patient was under ambulant treatment for slight decompensation and attending to a large business. Total diameter 13 cm. Heart greatly enlarged. Note where midclavicular line falls.

b, Same case after prolonged hospital treatment, following wide dilatation associated with major surgical operation. Drop heart type shown in both instances. Total reduction 2.6 cm. For six years since this picture was taken the patient has been leading an active outdoor life. He recently completed a trip around the world associated with great hardship and serious acute tropical infections.

a *b* *c* *d* *e*

Fig. 14. *a*, Luetic heart and aorta. Thirty year old male. Complained of dyspnea, precordial constriction and oppression since influenza in 1918. An ambulant patient attending to his business, who reported because he had been feeling worse in previous 3 weeks. Chancre at 17, no treatment. Heart diameter on admission 23.5 cm. Normal rhythm.

b, Same case after 3 weeks. Hosptal regime but no antiluetic treatment. Total diameter 18.5 cm. Reduction 5 cm.

c, Same case two and one-half months later under ambulatory cardiac regime plus anti-luetic treatment. Cardiac diameter 16.9 cm. Total reduction 6.8 cm. Note the evidence of the disease of the aorta itself.

d, Same case 4 months later. The cardiac diameter increased 1 cm., after trip during which patient felt well. Symptom-free on careful avoidance of overstrain.

e, Same case three and two-thirds years later. Free from severe pain. Carries on active business. Uses careful self-protection. Cardiac diameter 18.4 cm., a negligible increase for this case.

Dr. C. B. Wright: I would like to express my appreciation of the very great privilege it is to have heard Dr. Greene. There is nothing more difficult, it seems to me, than to evaluate to any degree of exactness the efficiency of a patient's myocardium, yet we are frequently called upon to do this. First, we must discriminate carefully between fatigability and myocardial insufficiency. It is true that all cases of myocardial weakness are easily fatigued but it is not true that all cases that are easily fatigued should be classed as myocardial insufficiency. The same may be said of a case of anemia, infection, or constitutional disease.

In other words a cardiopath is a patient whose trouble is due to some pathological change in the heart. Many clinicians are accepting the classification of heart disease championed by Dr. Thomas Bell: (1) heart disease due to endocarditis; (2) heart disease due to hypertension; and (3) coronary sclerosis. To be sure there are other causes, how important they are is still an open question. As Dr. Greene has said, the *x*-ray is the most reliable method of all in determining cardiac pathology, except in the early coronary cases. Here the history and observation of an attack are diagnostic. In determining the functional limitations of these cases, response to exertion is the easiest and most reliable test. Changes in vital capacity is a very valuable test in these cases and is especially helpful in eliminating non-cardiac conditions. Gastro-intestinal symptoms are early and often misinterpreted, as Dr. Greene has stated. Edema I would class later along with cough, basal râles, and liver enlargement. To sum up, the proper handling of these cases depends on: (1) one's ability to separate the cardiac from the non-cardiac; (2) to determine as accurately as possible the functional capacity of the heart; (3) to properly control the activities of the patient; (4) knowledge of when to use and how much to use of drugs, principally digitalis.

Dr. T. F. Avery: This has been a great treat, and it covers the ground so fully that there is not much to add. I have found in my own work that there are a great many cases of myocardial weakness not recognized. If we are on our guard we would find many hearts slightly decompensated, and I think we can benefit these patients a great deal. I feel that we ought to give as much intelligent care to the man with cardiac disease as we do to the one with acute appendicitis. We should never feel that a patient is beyond hope until he is carefully studied and painstaking treatment given. Some physicians rest patients too much and some don't rest them at all. After the flu epidemic there was a large group of people with weak hearts. Most of this group can be benefited under careful supervision, proper rest, tonics, restricted exercise, etc.

(Closing):

Dr. Eleanor Hill asked about slight dyspepsia with much flatulence and with apparently no heart disturbance; whether that is an early sign.

Dr. Greene: I find in a great many instances that dyspepsia is quite a prominent associated symptom of slight decompensation or sometimes decompensation that is more than slight, in the older group especially. It is a difficult symptom to evaluate primarily until tested by rest and cardiac stimulation. As I said in my paper, even a considerable degree of gaseous gastric distention ought not to affect the heart, if normal, and when it does so affect it you are probably dealing with one of those irritable hearts that bespeak chronic myocardial defect. It rarely or never would be encountered as the sole symptom, but is often obscurantly dominant.

Dr. Julius Johnson: I think Dr. Greene mentioned emotional factors among the causes. How important do you find that factor to be?

Dr. Greene: I have been more and more impressed by the importance of the emotional factor in the production of heart symptoms in established myocardial insufficiency and with that has come an increasing conviction that sustained, severe mental overstrain is almost as exhausting to an impaired heart as is physical labor. It is a very difficult question that you have put, but that is my feeling in regard to it, and recently I am encountering more and more cases in which this seems to be a factor of importance.

Dr. Erb: What is your opinion in regard to over-strains in young athletes, about the age of 18, or in the developmental years; for instance, running until they just drop almost exhausted.

Dr. Greene: I do not think it is a good thing. I should say it ought to be a question which depends to a considerable measure on the position of the stomach and the type of heart. There are boys whom it won't hurt at all. They apparently are knocked out by it but come back promptly and sustain no harm. The visceroptotic (congenital asthenic) type, however, that attracted my attention on the cardiac side some fourteen years ago, oftentimes can't do it safely. There are all grades. Some of them have remarkably strong hearts, and some *never* have had any considerable myocardial reserve.

We meet, in our case-history taking, such interesting instances with respect to individuals who all their lives have sheltered themselves from over-exercise; boys who can't play with other boys in the way those youngsters play. You find also a type where there seems to be an intermediate degree of myocardial strength. The youngster protects himself but is able to do some of the things. When he goes to college he keeps out of violent athletics, either consciously or unconsciously. When he chooses his life work he protects himself.

Then again you may have an individual who carries a visceroptotic physique and yet seems to be able to do anything you or I can do. You have to classify these cases and recognize the existence of wide variation in myocardial reserve, congenital and acquired.

Another thing I might add—in many instances you see very interesting examples of a type, which I may say constitutes half the population of the United States, who are all right as long as their nutrition is good or super-good, but if anything happens to knock them down, they are quite unfit for athletics until the high level is restored.

Dr. Roan: Is there such a thing as "athletic heart"?

Dr. Greene: That is a particularly hard question to answer. I don't believe there is, in the old sense of the word. I do think it is quite possible and very common to have most troublesome hearts in individuals who have carried on athletics in an improper way, or perhaps with a constitutional build that should have kept them out of the more strenuous forms.

I might have shown you tonight a film I have always

valued as it was so typical an example of crossed inheritance in a young man. He was particularly anxious to go to the front along athletic lines. I could have told him beforehand that he should never have attempted it. His mother was a magnificent creature, Juno type, and came of a family particularly fitted for athletics. His father came of stock which was of an entirely different type, *i.e.*, the asthenic and visceroptotic order. The boy inherited his father's heart and the mother's body musculature and osseous structure. I think there are many instances where hearts are of that nature (misfits through crossed inheritance). Twice I have had to take such men out of the great eastern rowing crews.

I did want to say a word in regard to the hearts of old people. I think my sympathy goes out more to our old, "failing" men and old women than to any other type of individuals I know of. Stop and think for a moment about the attitude of mind people hold by tradition toward them and their hearts. A cherished and beloved old gentleman or old lady begins to grow weak, unable to do without discomfort or exhaustion, this, that or the other thing which he or she formerly has done with ease. The clock begins to run down. That is looked upon as a physiologic process and of course in a measure it is, but we almost inevitably confuse the physiologic and the pathologic, and allow a case which is actually a heart-case by its pathology to go absolutely unattended and unrelieved. I see many, many instances of the astonishing effect of a little regulation or systematic treatment in improving the condition of people who were simply regarded as the victims of senility. It is an interesting fact, as Dr. Councilman has said, that 50 per cent of all hearts of people over 60 show hypertrophy at autopsy. Now we practically abandoned the idea of so-called work hypertrophy and if hypertrophy exists in such a high percentage of cases of that age, we must believe that it was due to disease processes, *i.e.*, that these hypertrophies are the results of toxemia (repeated or continuous over long periods) with consequent more or less unconscious overstrain of varying degree and duration.

It seemed to me as I read that statement of Councilman's that it explained another thing which had puzzled me. I have read expressions of opinion by some of the most eminent authorities in the world to the effect that a heart in a person of 60 can be 15½ cm. in diameter and be normal. I have never met such an instance, never. I thought that perhaps this statement of Dr. Councilman went a long way to clear that up. That must be the average diameter covering a very large number of cases, many being abnormal, but lacking *gross* symptoms of myocardial insufficiency.

We have a lot of things to clear up along the line talked about here tonight and the matter is, as has been said by Dr. Wright, a difficult one to present. I shall be very glad if I have done what I tried to do to help in clarifying the question of earlier diagnosis.

A STUDY IN OTITIC SINUS THROMBOSIS*

Charles D'Arcy Wright, M.D.
Minneapolis

Otitic sinus thrombosis originates by direct extension to the sinus from an otitis media or by way of the mastoid. I am considering today direct bulb thrombosis as a lateral sinus thrombosis.

Bulb thrombosis may come directly without the mastoid involvement:

1. From dehiscence in the floor of the tympanic cavity, due to close proximity to the bulb.
2. From extension of infection of the carotid plexus in the middle ear directly to the bulb from the middle ear.[1]
3. From the middle ear by a suppurative labyrinthitis through the internal auditory vein to the bulb (osteothrombotic phlebitis).[2]

Nearly all sinus thrombosis comes through the mastoid to the lateral sinus.

The germs of infection are various, the common ones being the streptococci and staphylococci, tubercle bacilli, and pneumococci, especially type III (nonhemolytic).

CLINICAL SYMPTOMS

The clinical symptoms of sinus thrombosis are chills followed by high temperature, sweats, and remission of temperature with considerable prostration. The stomach is irritable and there is often vomiting. The headaches, while often severe, are not the nocturnal temporal headaches which characterize extradural abscess. Petechial hemorrhages, progressive prostration, loss of normal blood picture, changes in the spinal fluid and metastatic suppuration are also present.

Except for metastatic suppuration all of these symptoms are generally present.

BLOOD PICTURE

In lateral sinus thrombosis of the variety which starts extravenously, the blood picture is not so materially changed: The hemoglobin and the red blood count are not much reduced and this is a most important point.

The white cells in all acute infections of the middle ear and adnexa show an increase in poly-

*Read before the staff meeting of the Lakeside Methodist Hospital, Rice Lake, Wisconsin, June 21, 1927.

morphonuclear cells; yet it is not the number but the ratio that is important. The increase in the total number of cells indicates that the body forces are meeting the toxic products which are being absorbed. The number of polynuclear cells indicates the amount of toxic material absorbed.

In the variety of sinus thrombosis which starts intravenously in the small vessels of the mastoid mucosa, the cause is always or nearly always hemolytic streptococcus. The hemoglobin drops rapidly and persistently and the red blood count drops proportionately. Red blood cells are being destroyed by hemolysis. So constant and reliable is this sign that it will establish a tentative diagnosis between the two varieties when laboratory research is not possible.

BLOOD CULTURES

Positive blood cultures are found in somewhat over one half of the cases of sinus thrombosis. There are several reasons why the percentage is so small.

When the infected emboli are carried to the lung, there may be infection only of the pulmonary circulation. Other infected foci may be quite walled off by surrounding granulations and not produce general blood stream infection.

I place little weight on negative blood cultures.

SPINAL FLUID

The observation of the spinal fluid is of great aid to us in otitic complications. It should always be carefully observed in all chronic otitic infections before any operative procedure. Recent study of quantitative sugar and chloride determinations in the cerebro-spinal fluid during acute purulent meningococci meningitis when specific serum therapy is being given indicates that the specific serum increases the sugar and also the chloride content, yet that the chloride estimation gives no diagnostic or prognostic information.[9]

Pressure.—Meningitis serosa, from a circumscribed focus of meningeal inflammation, may set up an inflammatory edema which spreads through the arachnoid and causes marked increase in the pressure of the spinal fluid. This inflammation may subside or lead, after some time, to general suppurative meningitis.[7,8] A marked increase of the spinal fluid pressure should lead to careful examination of its carbohydrate index and the estimation of the presence of choline.

Increased pressure means extra-cranial tension. Any irritability of the meninges will change the clear fluid to a cloudy one. If many bacteria are present, on standing, there will be a coagulum. Blood is often present through accidental venous puncture in drawing the fluid. Pure blood in the fluid in repeated punctures is conclusive evidence of hemorrhage in the meninges.

Increased lymphocytosis only means meningeal irritation and is a favorable sign, except in tuberculous cases.

Polymorphonuclear cells in the spinal fluid are different, however, and strongly point to some suppuration in or near the meninges. They are found in protective meningitis. In protective meningitis when there is an increase in the lymphocytes and a decrease in a previous existing polynuclear count, the outlook is good.

Bacteriology.—Smears and cultures should both be made. Of course, positive cultures are not always present when bacteria exist.

The intracellular meningococcus, streptococcus hemolyticus, streptococcus mucosas or the influenza bacillus present in the spinal fluid give an extremely bad prognosis.

Albumin.—This means little.

Globulin.—Except as an evidence of some irritation the presence of globulin means little.

Carbohydrates.—We are indebted to Kopetsky[4] for his discoveries relative to copper reducing carbohydrates in the spinal fluid, and to Donaph[5] who in 1903 reported that decomposed lecethin gave choline in the spinal fluid.

When copper reducing agents are absent and choline present, meningeal suppuration is reasonably certain. This test will show before bacilli can be demonstrated in the spinal fluid.

Reaction.—Normal spinal fluid is alkaline or amphoteric. Decided acidity is indicative of meningeal inflammation.

Cytology.—Decided increase in the number of lymphocytes is indicative of meningeal irritation. They function to remove debris in the fluid and on the pia and except in tuberculous cases their increase is favorable. Polymorphonuclear cells are different and they are never found except when some suppurative process is mighty close to, or in the spinal fluid. They are abundant in protective meningitis where an extra-dural

abscess is being walled off. It is a favorable sign when the fluid shows a plus polynuclear count which begins to decrease as the lymphocytes increase.

Wassermann examinations should be made on the blood and spinal fluid both and should be repeated, if negative, when the recovery is not prompt.

Operative cases when hospitalized should have a blood grouping as it saves time in searching for a proper donor. When donors have been grouped previously, they should be re-classified. One system should be used throughout, either cell or serum reaction.

Whole blood is superior to citrated blood. Whole blood transfusion replaces hemoglobin, red cells, and supplies new antibodies.

Immunized donors have questionable advantages over non-immunized donors.

X-RAY PLATES

The *x*-ray plate is of great value. *X*-ray is of greater use in class number one.

I recently had three plates taken inside of fifteen hours and watched in this time the advance of the cellular destruction toward the sinus. This occurred very early and rapidly. We wished to wait for more walling off but could not safely do so. There was an extremely rapid advance of the infected mass toward the sinus.

The *x*-ray plate is helpful in giving us the proximity to the antrum of the fossa and the lateral sinus. In chronic cases the plate always shows more or less sclerosis. In acute exacerbations in chronic cases the plates are often misleading.

Sinus thrombosis from otitic diseases is a septic systemic invasion.

In cases extravenous in their origin the infection reaches the sinus by a pressure excavation of the tissue lying between the middle ear and the sinus, by way of the mastoid. The infected mass is surrounded by granulations and sometimes, at first, by masses of dense and adherent cholesteatoma. This pressure shuts off the circulation and the bone becomes eburnated. The sinus wall is impinged, the circulation through the sinus is slowed, the epithelial lining of the sinus is injured and the infected mass pushes through the outer wall into the sinus. Thus the three cardinal factors of a thrombus are furnished, namely, slowed circulation, injured epithelial wall and infection. The sinus, when exposed, is found crowded with granulations, and, if reasonably advanced, is solid from the thrombus. In these cases the general sepsis comes late.

Cases intravenous at the start begin by a sepsis in the veins of the thickened mastoid mucosa. This thrombus travels to a larger vein and reaches the lateral sinus by the intravenous route. I believe these are all of hemolytic streptococcus origin even if the organism is not demonstrable. Often the sinus wall in these cases looks normal, aspiration shows red blood, and the vein wall may be a little or considerably thickened (mural thrombus). In these cases the systemic sepsis comes early. It may even come before the mastoid is diseased. In this class also the hemoglobin and red cell count drop far and rapidly.

When one has a double mastoid disease at the same time, it is difficult to tell which side has the sinus complication, especially if the mastoiditis is of the intravenous, number two type. Here the fundus examination will sometimes help to determine. The jugular bruit is not of value to the writer.

Quantitative estimation of the number of colonies of streptococcus of an equal amount of blood from the two jugular veins or from each sinus is rather uncertain as to value. Double mastoiditis is more common in number two class as they very often follow infectious fevers.

TREATMENT OF LATERAL SINUS THROMBOSIS

Before surgery of the lateral sinus is attempted, other possible sepsis must be excluded, as meningitis, malaria, etc.

Where after mastoid operation, the sinus wall is diseased, the integrity of the vessel destroyed, or where the sinus is opened, containing pus or thrombus, then the radical sinus operation is indicated if a systemic sepsis exists.

In class number two when no apparent disease of the sinus exists but systemic sepsis follows mastoid operation coupled with a marked reduction of hemoglobin and red cell count, then the radical sinus operation is indicated.

I feel safer to ligate the jugular as the first procedure where in class number one there is a palpable thrombus of the jugular and in class number two, in fulminating cases. The jugular

is very easily ligated with the facial vein as a guide after opening the carotid sheath, and, years ago, I often sewed it in the wound, allowing it to function as a drainage tube.

There has been much discussion whether to remove the thrombus or not. The writer has for thirty-five years followed the following rule:

In class number one the vein is opened and plugged. In class number two the distal end of the thrombus is removed (no matter how far it extends) till fresh blood is obtained.

One asks how the classification was made thirty years ago? The writer then called class number one cases where nature seemed able to help, and class number two cases where nature seemed to be all through. The look of the patient yet gives a decided tentative classification.

In systemic infection from sinus thrombosis once diagnosed, three considerations are vital:

1. Time is the essence of the contract.
2. In class number two with decreased hemoglobin and falling red blood count, whole blood transfusion from a classified donor, and repeated transfusions, are indicated.
3. In class number two, where the hemoglobin does not pick up, more surgery is demanded, as it will show very definite results when the eradication of the infection is complete.

I think that to report mortality following operation, even if it is a good record, is ethical. The writer has operated mostly at St. Mary's Hospital for over thirty years, having done a considerable number of mastoid operations in this hospital, including cases of lateral sinus thrombosis with extradural abscess and protective meningitis including also metastatic suppuration, and the hospital records will bear me out that my recoveries have been one hundred per cent.

Not having had a death at St. Mary's Hospital during this period of mastoid operations and lateral sinus surgery, it would take a good deal of scientific reasoning to get me to remove the distal end of the sinus thrombus in class number one or to fail to remove it in cases listed. under classification number two.

Outside of the lateral sinus operations, the removal of all diseased tissues in the middle ear and its adnexa, the removal of any extra-meningeal pus, perfect rest, the promotion of excretion of the toxic products, colonic irrigation, the increase of fluid intake in cases not too prostrated, are desirable. Hypodermoclysis has been useful immediately after operations (followed by great prostration) in class number one. In any case of very irritable stomach rectal tidal flow of plain glucose has served me very well.

CASE REPORTS

Case 1.—A child, aged 9, hospitalized at St. Mary's hospital by the late Dr. James Dunn, in the fall of 1898, gave a history of right otitis media some years back, which healed entirely. Some days before I saw the patient the symptoms were fever, rigidity of the neck, increased deep reflexes, severe temporal headaches at night. The patient was very restless and cried out at night during sleep. A diagnosis of purulent meningitis had been made. As a doubtfully palpable jugular was present, Dr. Dunn allowed me to do a lateral sinus operation. The sinus was thrombosed and a very large extradural abscess was evacuated. The sinus was packed and the pus still continued to drain from the extradural abscess. At this time suppurative meningitis meant death, which was waited for expectantly. The child was placed on the right side so that the meninges might drain. This was one year after Sir Charles Ballance of London, than whom there has never been a keener observer, had first reported drainage of the meninges in suppurative meningitis by the occipital route.[6] As the patient persisted in recovering, I was somewhat elated over the case.

Dr. Dunn, in his charitable way, was wont, when serious cases worried him, to visit poor, old, blind Sister St. Patrick in the hospital to make her a contribution of some gold piece and request her intercession to the Deity for the success of a case.

After the child recovered, I spoke to Dr. Dunn about the case and I shall never forget the remark he made in his inimitable friendly manner. He said, "I am not so sure whether surgery or poor, blind Sister St. Patrick's prayers produced this result."

Of course, this was a case of extradural abscess with sinus thrombosis and protective meningitis, which latter meningitis we could not differentiate from general purulent meningitis at that time.

Case 2.—Mrs. M. H., aged 42, hospitalized at St. Mary's hospital December 1, 1904, had an otitis media and mastoiditis. The drum was opened and mastoid operation performed. The patient soon developed a facial erysipelas and later an osteo-myelitis of the left tibia. The osteo-myelitis of the tibia existed previous to any ear trouble. Dr. H. B. Sweetser, Sr., was tending her general condition and I do not recall who was in charge of the case, Dr. Sweetser or myself.

The patient gave all the symptoms of general bacteriemia, with chills, temperature of 102 to 105, followed by great prostration. On my first consul-

tation I advised lateral sinus operation but Dr. Sweetser was rather hesitant owing to the question as to whether the sepsis came from the tibia, the erysipelas or the lateral sinus. Eight days later with continued chills, high temperature and increasing prostration, Dr. Sweetser consented, and I opened the lateral sinus. A large thrombus was found, the sinus was packed, and Dr. Sweetser ligated the jugular vein near the junction of the facial. The distal end of the clot was not removed. The patient made a slow and uneventful recovery and was well fifteen years after this operation.

Case 3.—Mr. G. H., Joel, Wisconsin, was hospitalized at St. Mary's, June 23, 1924. The patient gave a history of otitis media of long standing. A diagnosis of mastoiditis was made and a mastoid operation was performed June 25th. The patient did reasonably well until the latter part of June when he began to have chills followed by high temperature, severe sweats and prostration. These symptoms became more exaggerated until July 7, 1924. He had then shown a temperature of 104 and 105 after chills and was very much prostrated.

His hemoglobin, when admitted, was 80 per cent, leucocytes 9,600, large lymphocytes 28 per cent, large mononuclears 2 per cent, polynuclears 70 per cent.

After his mastoid operation his leucocytes increased to 16,400 and on July 7th to 19,000. The polynuclears went to 80 per cent on July 7th, large lymphocytes dropping to 18 per cent. The urine showed albumin and casts.

On July 7th a lateral sinus operation was performed. Dr. James Hayes tied off the internal jugular. The sinus was completely thrombosed and there was a large extradural abscess which was drained. The distal end of the thrombus was not removed. The sinus was packed with triple iodoform roll packing.

The patient developed a large metastatic abscess in the groin about July 15th and several other metastatic abscesses followed, all of which showed a selective affinity for the muscles and joints. The blood cultures were negative. The spinal fluid was cloudy, formed a coagulum on standing and contained a streptococci which was questionably classified as mucosus.

The patient was given intravenous injections of mercurochrome every other day in large doses.

For a long while we despaired of his recovery but during the latter part of September, he left the hospital in good condition and a recent letter states that he is very well.

Case 4.—P. T., aged 11, referred by Miss Clara Meyman, who nursed Case 3, was brought to St. Mary's Hospital April 18, 1926, and gave a history of otitis media of three weeks' standing following influenza. He had all the symptoms of mastoiditis and in addition, when seen had recently had chills and a temperature of 106. This had been followed by severe sweating and collapse.

His hemoglobin was 80 per cent, lymphocytes 17 per cent, mononuclears 20 per cent, polynuclears 80 per cent, baso 1 per cent. The urine showed granular and hyaline casts and albumin.

Mastoid operation was performed that day with a lateral sinus operation at the same time. I tied off the jugular just above the facial vein, put in the usual triple pack and did not remove the distal end of the thrombus.

The patient was out of the hospital on the twelfth operative day and a recent follow-up letter states that he is in perfect health.

Case 5.—J. W. C., aged 23, male, was seen in September, 1923. The patient had had a severe pain in the right middle ear for three days, followed by chills and some fever. No physician was consulted. The patient was too prostrated to get out of bed and I was called to see him.

He had been a healthy, strong man, had never been sick and never been injured. He had suffered only from what he termed a cold and sore throat which had been followed by considerable desquamation. The desquamation ceased about the time the middle ear began to pain.

Upon examination he was found to have a temperature of 106, severe headaches, pain over the right side of the head with central nervous depression and extreme shock. He could hardly answer questions due to the trembling of the lower jaw. His hemoglobin was 55 per cent and his red blood count was 3,000,000. His spinal fluid was negative except for presence of polymorphonuclears and cloudy appearance. The Wassermann tests on blood and spinal fluid were negative.

At his home the jugular vein was tied off and citrated blood was transfused. The mastoid was opened and found perfectly clear; the lateral sinus was thrombosed and the walls of the veins thickened. The sinus was packed and the distal end was not removed. There was recurrence of fever and chills, decrease in hemoglobin and red blood count, though benefit was obtained by each intravenous administration of blood. On the ninth day following the packing of the sinus, it was reopened and the distal end of the clot removed. The sinus was packed and an attempt was made at whole blood transfusion which was not successful, due to some leak in the tube. Citrated blood was freely administered thereafter and the recovery was complete and uneventful except for a partial paralysis of the third nerve on the right side with some ptosis, divergence, and some dilation of the pupil. The optic disc, while not choked, was extremely congested and the retina was very sensitive to light. The paralysis of the third nerve, I think, was some metastatic process interfering or partially closing the superior orbital fissure, but the fourth and sixth nerves escaped though they rather protect the third in their passage through the sphenoidal fissure.

There was no orbital abscess; at least, if there was, it was absorbed.

This man was extremely ill for a long time. Inspection in April, this year, gives only a slight anisicoria. Both pupils react normally. Cavernous sinus complication may have caused the third nerve paralysis but no other symptom substantiated this presumption.

During the course of the illness, the hemoglobin repeatedly dropped to 40 per cent and the percentage of polynuclears exceeded the white count most of the time until after the distal end of the clot was removed. The blood picture then righted itself very rapidly. The clot was not entirely removed in the first operation due to trepidation in going back to the median line of the occiput. This was an error.

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CULTURE OF BACILLUS BULGARICUS

Bulgara Tablets-H. W. & D., Culture of Bacillus Bulgaricus-Lederle, Culture of Bacillus Bulgaricus-Fairchild, Galactenzyme Tablets, Lactampoule, Lactic Bacillary Tablets-Fairchild, and Vitalait Culture of Bacillus Bulgaricus Omitted from N. N. R.

The Council on Pharmacy and Chemistry decided to retain bacillus bulgaricus preparations in New and Non-official Remedies, provided that the claims for these were revised to show such preparations to be of value only in the preparation of soured milk, and, further, that all claims for their intestinal implantation and for their value as external applications be discontinued. The Council reports that the following products have been omitted from New and Non-official Remedies because acceptable revisions of the claims were not made: Bulgara Tablets-H. W. & D. (Hynson, Wescott & Dunning); Culture of Bacillus Bulgaricus-Lederle (Lederle Antitoxin Laboratories); Culture of Bacilllus Bulgaricus-Fairchild, Lactampoule, Lactic Bacillary Tablets-Fairchild (Fairchild Bros. & Foster); Galactenzyme Tablets (Abbott Laboratories); and Vitalait Culture of Bacillus Bulgaricus (Vitalait Laboratory of California). (Jour. A. M. A., June 4, 1927, p. 1831.)

ETHER-OIL-MORPHIN-MAGNESIUM SULPHATE ANALGESIA IN LABOR*

REPORT ON 100 CASES

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In compiling this short study of obstetric analgesia as secured by the administration of colonic-ether-oil with morphine and magnesium sulphate, I have followed the work done in the New York Lying-In Hospital by Dr. J. T. Gwathmey and it is to his articles as they have appeared in the various obstetrical journals since 1923 that I am chiefly indebted for my technical and historical information—especially the one occurring in the American Journal of Obstetrics and Gynecology in May, 1923, in which he makes his preliminary report.

Aside from sustaining and actually saving life there is probably nothing that is more appreciated by our patients than relief from pain and suffering. From time immemorial those who have practiced the healing art have been called upon to assuage pain. History relates many incidents where people have subjected themselves to all manner of indignities and actual torture in the hope of getting relief from pain and suffering. Hypnotism, mesmerism, inhalation of noxious fumes, weird incantations, administration of foul tasting substances, have all had their trial as hoped for agents to ameliorate pain. It was left to Morton, an American dentist, to discover the first real anesthetic and it was Simpson of Edinburgh, who first used ether to relieve surgical and obstetrical pain. It was shortly after this discovery in 1846 that Simpson discovered chloroform, which soon came into very general usage as an anesthetic in childbirth. Even today chloroform enjoys a high popularity in this field. As early as 1880 the combination of nitrous oxide and oxygen was recommended as a substitute for chloroform as an anesthetic and today this same agent in a modified form undoubtedly enjoys first rank as an analgesic in labor. However, it has the disadvantage of being rather expensive and practically requiring an expert for its successful and

*Read before the Hennepin County Medical Society, Minneapolis, March 30, 1927.

afe administration. These two conditions make his form of anesthetic unavailable for a large umber of child-bearing women.

Twilight-sleep (Scopolamin-narcotin anesthesia) is likewise limited, as it requires an expert nd very exacting environment to make it at all uccessful and safe. Kroenig and Gauss introluced this form of analgesia into this country n 1913 at Chicago, reporting 3,000 cases. They till employ it and very successfully, but, of ourse, they are experts and have ideal condiions. In this country it has fallen largely into lisuse except in a few well equipped institutions vhere surroundings can be made to suit the requirements and where an exacting technic is developed. It is not without danger.

To come back now to our subject of ether-oil nesthesia. Gwathmey's object was to find a nethod of relieving child-birth pain which would n no way endanger the life or health of mother nd child, would be simple of administration, inexpensive, and in which well standardized drugs nly were used, a method that could be used in he home as well as in the hospital, and that vould not require the services of an expert in ts administration.

The drugs used and their actions in brief are as follows:

The ether-oil retention enema—

Quinine Hydrobromate Gr. xx
Ether ℥ 11 ss
Alcohol ℥ 11
Olive-Oil q. s. ℥ IV

These drugs are too well known to require any explanatory comments except to say that quinine s actually absorbed from the bowel as is shown by its recovery in the urine subsequently and by ts production of tinnitus. The alcohol aids in the solution and absorption of the quinine. The olive oil insures freedom from irritation and aids in more uniform absorption and evaporation of ether.

The hypodermic formula consists of—

Morphine Sulphate gr. 1/6 or gr. 1/4
Magnesium Sulphate (50% sol. in 2½% novocaine) 2 c.c.

Morphine is a well known narcotic and analgesic. It relieves pain and aids materially in softening a hard and rigid cervix, for which purpose it has been used for many years in obstetrics.

Magnesium sulphate will require a little more detailed description as to its properties, inasmuch as it is an extremely toxic drug if improperly used. It produces anesthesia and inhibits life. Meltzer in 1898 showed that if two drops of a 5% magnesium sulphate solution was injected into the brain of a guinea pig, a complete anesthesia and relaxation of the body followed, lasting several hours. With this as a basis a prolonged experimental study of magnesium was carried out and many articles published. It was definitely established that its action was not one of motor paralysis alone but also one of general relaxation and anesthesia producing loss of consciousness and sensibility. In 1916 Meltzer and Auer used it as an anesthetic in man without any untoward results.

It would require too much time to enumerate the animal experiments carried out by Meltzer, Auer and Gwathmey for the purpose of arriving at an absolutely safe dose of magnesium sulphate that could be used clinically to produce the desired analgesic effect and so I will only state that the result of their thorough and careful study led them to the conclusion that the clinical dose of 2 c.c. of a 50 per cent magnesium sulphate solution is one hundred times removed from the minimum lethal dose and that a man weighing 165 pounds would have to be given 128 such injections to make the drug fatal. Magnesium sulphate causes paralysis and loss of sensibility without excitation. Ether causes excitation before anesthesia is produced. These facts suggested the combined use of ether and magnesium sulphate and it was found that there existed what is known as a synergism between these two drugs, namely, that there is a reciprocal augmentation of the action of one by that of the other. This augmentation is more than a summation of their combined properties because the resultant effect is too profound.

To prove this principle Meltzer showed that the amount of ether necessary to anesthetize a dog is only one tenth as great when the magnesium is used as when it is not used. Gwathmey showed this same principle to exist with the use of morphine and magnesium. By combining a certain given dose of morphine with 2 c.c. of 50 per cent magnesium sulphate the narcotic action of the former was increased from 50 to 100 per cent. In other words, morphine given

with magnesium sulphate will relieve pain from ten to thirty hours whereas morphine alone will give relief for only from two to four hours. With ether-oil and nitrous oxide it apparently deepens the anesthesia and we have observed that we get along with much less gas-oxygen when we use the rectal ether analgesia with magnesium sulphate and morphine hypodermically.

Having given a very brief outline as to the action of the various drugs used in the so-called ether-oil analgesia we come to the actual technic of its administration. As stated before, it is a simple procedure and yet the degree of success depends very much upon its correct usage, especially as to time and manner.

Administration.—This, I think, is extremely important, but difficult to state concisely as it depends so much upon the attendant's ability to properly interpret the findings of a careful examination of the particular patient in labor. This examination should mean more than to determine the degree of dilatation, softening and thinning of the cervix, duration and character of the contractions, proportion and position of passenger to passages. It means, in addition, an understanding of the patient's emotional make-up, her reaction to pain, her willingness to coöperate, her endurance and, in short, her general mental attitude to her travail, and this is where experience and judgment are our greatest help.

For practical purposes, the best time to begin with the administration is when the pains come every four to five minutes, last about thirty to forty-five seconds with a two to two and one-half finger dilatation. The patient has had her preliminary preparation, including a thorough cleansing enema. The first hypodermic injection consisting of 1/6 gr. morphine sulphate and 2 c.c. of 50 per cent magnesium sulphate solution in 2.5 per cent novocaine is given, preferably during a pain and best into the gluteal muscle. This to be done, of course, under strictest aseptic technic. If in twenty to thirty minutes there is no appreciable relief, a second injection of 2 c.c. of 50 per cent magnesium sulphate is given, but no more morphine. As a rule, this insures considerable relief and relaxation. If labor progresses and the patient begins again to complain of pain, the ether-oil enema should be given, but not sooner than forty-five to sixty minutes after the first hypodermic.

The necessary apparatus consists of a No. 22 French soft rubber catheter, a large glass syringe holding at least 30 c.c. and an artery clamp.

The patient is placed in the left Sims position. The anal region is thoroughly anointed with vaseline to avoid irritation. An ounce of olive oil is poured into the barrel of the syringe to which the catheter is attached and the catheter is allowed to fill entirely with oil so as to exclude all air. The catheter is then clamped and inserted into the bowel to a distance of at least eight inches. The gloved finger should also be introduced to keep the catheter from curling up on itself and to assure its passage beyond the fetal head in case it is low in the pelvis. The clamp is then removed and the oil slowly forced into the bowel, allowing a small amount to remain at the bottom of the syringe to avoid the later inclusion of an air bubble. The warmed ether-oil is then poured into the syringe and allowed to gravitate into the bowel, a stripping movement along the catheter aiding this, although the plunger may be used if necessary. The injection should be made slowly between contractions and the patient cautioned against bearing down. As a rule, about ten to twelve minutes should be consumed in the administration of the ether-oil enema. It is well during a pain to remove the plunger and press on the perineum and buttocks so that any excessive gas or air will escape through the catheter and syringe rather than alongside the tube and thus force out the solution. Following the ether-oil another ounce of olive oil is injected. The catheter is then clamped while it is still filled with oil, the syringe removed and the catheter left in the rectum for about fifteen minutes, during which time the perineum and buttocks are supported and the patient urged not to bear down with a pain. Most patients will coöperate nicely as they are anxious for relief, having previously been told that they must endeavor to retain the injection if they are to get help. The morphine and magnesium sulphate previously given aid greatly in their ability to do this. A nurse should remain present with the patient as some of them are rather restless and toss around more or less. In nearly all cases the patient registers

definite drowsiness and pain relief even before the giving of the enema is completed. Half an hour following the enema another hypodermic of 2 c.c. magnesium sulphate should be given, but no morphine. In the average successful case the patient will sleep quietly between contractions and will give but very little evidence of suffering when they do occur, possibly moving about some and moaning a little. When asked whether or not she is having pain the answer is usually rather indifferent and more in the negative.

The average duration of the analgesia is three and a half to four hours and in long labors the ether instillation may be repeated three or four times at three or four hour intervals, though that is seldom necessary. In all but the first enema only 10 grains of quinine should be used and the ether dosage too may be reduced according to indications. If the time is properly gauged for the administration of these drugs and the labor is practically normal, the patient will nearly always deliver in from one to six hours following the first instillation. The average time in our series was five hours and by eliminating five cases of unusually long labor (one of sixty hours) the interval would be reduced to three hours. The amount of inhalation anesthesia necessary in these ether-oil cases varies. In our experience it has been greatly reduced, the average time being 49.6 minutes—quite a number of patients requiring none at all.

When these mothers are questioned on the following day it is remarkable how hazy their memory of the events of their suffering is, many of them do not recall being taken to the delivery room and some do not recall anything until some time after they return to their rooms.

Experience.—We have used this form of analgesia at the Hillcrest Hospital in about 300 cases, and I am reporting here somewhat in detail 100 cases so taken care of in 1926. Of these 100 cases 74 were primiparas, 16 in their second confinement, 7 in their third and 3 in their fourth. Ninety-four required but one ether-oil enema and six had two.

Method of Delivery.—Seventy-five were spontaneous deliveries, 2 breech extraction, 1 internal podalic version on account of brow presentation, 17 low forceps operations and 4 median forceps operations. These were persistent posterior positions and were treated by the Scanzoni method.

Degree of Pain Relief.—This again is a matter difficult to ascertain definitely as it involves the individual reaction to pain as well as pain relief. What is pain to one is merely slight discomfort to another. It also depends very much upon what the patient has been led to expect. It is decidedly poor policy to promise a painless labor. We aim to tell our patients that they can reasonably expect a marked degree of comfort and pain relief, especially if they coöperate fully with our efforts to help them. Mutual understanding, confidence and full coöperation between patient and accoucher are wonderful aids to the successful conduct of a trying labor case. We feel justified in stating that in our experience all cases so treated get some benefit and relief. At least 95 per cent of the cases are greatly relieved and a large number of them are very emphatic in saying that pain relief was almost complete. Practically all of them when questioned later show that their memory of suffering is rather vague.

Influence on Length of Labor.—This depends somewhat on one's ability to judge the proper time in labor to begin the pain-relief treatment. If given earlier than indicated above it may temporarily stop labor but that would cause no real harm to either mother or child and it would not interfere with the repetition of the treatment later when labor is again properly advanced. From our limited experience we have come to the conclusion that if properly given it does not lengthen labor, in fact, in many instances we have felt that it hastened the end of the first stage, especially in those cases having a rigid cervix and where membranes ruptured early.

Effect upon the Baby.—In our series of 100 cases (101 babies) we had: One stillbirth in a primipara with prolonged labor, early rupture of membranes, rigid cervix, persistent posterior position and a difficult medium-forceps delivery.

One early post-natal death, five hours after a difficult instrumental delivery.

One anencephalus.

Six babies moderately apneic requiring moderate degree of resuscitation, but recovering well. The remaining 93 babies showed good color and cried spontaneously.

Effect on Third Stage of Labor.—Our observation is that the ether-oil in no way affects this stage of labor. I might state here that we use 0.5 to 1 c.c. of pituitrin practically routinely at

the end of the second stage. We feel that it shortens this stage and reduces the amount of blood loss. We had no cases of retained or adherent placenta or secundines, in fact, no cases necessitating any intra-uterine or intra-vaginal manipulation or any treatment whatever for hemorrhage. But constant certainty of a well contracted fundus with an assistant's hand on the patient's abdomen is imperative to good prophylactic treatment against unnecessary blood loss. Blood is the patient's life and it should be constantly in the attendant's mind that there must be no needless loss of this precious fluid.

SUMMARY

In my opinion the following statements can be justly made in favor of Ether-Oil Morphine Magnesium Sulphate Analgesia:

1. It in no way endangers the life or health of mother or child. It is inexpensive, simple of administration, and calls only for well recognized drugs.

2. It leaves the patient more cheerful and less exhausted after labor. This is very noticeable and makes for a happier immediate puerperal state and a better and more rapid recovery. Memory of the otherwise painful event is definitely blunted and that is always desirable.

3. It not only relieves the patient from pain, suffering, and anxiety but it does much to calm and quiet the immediate family. We all have to admit that the patient's immediate relatives cause us more trouble and actual worry at times than the patient herself.

4. It also very decidedly helps the doctor in attendance on a slow and trying labor case. By this I mean that no matter how good one's judgment as to the patient's progress the constant imploring and begging of the patient and her family for a termination of the suffering is bound now and then to influence one to too early interference with an otherwise normal but slow and painful labor. We are not doing as many operative deliveries nor have we as many traumalized babies as we had previous to using this form of pain relief.

In closing I wish to thank Dr. C. E. Willcutt of Hillcrest Hospital for the privilege of reporting a number of his cases and also Miss Willcutt, our anesthetist, for assembling the necessary charts and making a very helpful outline.

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MEDICAL SCHOOL AND HEALTH CENTER IN PEKING

"In spite of disturbed conditions in China the Peking Union Medical College, a modern teaching and research center, built, equipped, and maintained by the Foundation, continued its work without interruption during 1926. In the medical school there were sixty-four undergraduate students and eighty-two physicians doing advanced work. The school of nursing enrolled twenty-three pupils and twelve graduate students. Of the eighty-two teachers, forty-three were Chinese and thirty-nine were foreigners.

"The large proportion of Chinese teachers reflects a policy which was adopted when the institution was planned in 1916. The aim has always been to develop a wholly Chinese teaching staff and ultimately to transfer the college and hospital to Chinese auspices. This plan has been so consistently followed that the first step could be taken safely in the early future.

"Even now, should an emergency arise, there would be enough Chinese staff members to constitute more than a skeleton organization without any foreigners at all. The plant could be operated and the hospital kept in service. Even the instruction of students could be creditably continued in almost all departments, in a few on quite the present basis. For the hospital superintendent, the superintendent of mechanical operation, the heads of two departments, the second men in others, promising juniors in the rest, a large group of the nurses, many of the secretaries, practically all the typists, and the subordinate personnel are Chinese. A competent Chinese director for the whole institution could probably be found either from within the present staff or from a group of well-trained Chinese doctors who have had administrative experience elsewhere. A premature and hasty transfer to Chinese control would no doubt be unfortunate for the institution, but it need by no means be disastrous, provided the Chinese staff was permitted to carry on without interference from political intrigue or public disorder.

"For obvious reasons China has offered no opportunity for public health work of the kind which the Foundation is prepared to undertake. There has been no stable government with which to enter into relations. The Peking Union Medical College has, however, co-operated with the Metropolitan Police Department in creating a health center, which during 1926 had its first full year of operation. The activities have included sanitation, the gathering of vital statistics, the control of communicable diseases, and medical service through a clinic which does both curative and preventive work. Doctors, laboratory workers, sanitary inspectors, and visiting nurses have constituted the staff." —Information Service of the Rockefeller Foundation.

MELANCHOLIA*

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To anyone interested in the various so-called "functional" diseases to which the human race is subject, anything concerning a functional psychosis known as melancholia merits consideration. In every branch of medicine one encounters patients afflicted with this disease, for it *is* a disease in the broad sense of the term, with a rather definite group of symptom complexes taking a certain course. In spite of the fact that these symptoms cannot be heard with a stethoscope, photographed with an *x*-ray machine, or palpated with the examining finger, they do exist, and, by a careful history, exploration of the patient's mental fields, and determination of his volitional, emotional, perceptional, and intellectual reactions, can be elicited. Because of their powerful influences upon the conduct and comfort, yea, even the life of the individual, they must be recognized and treated.

During the past three years we have had the opportunity of examining and treating a fairly large series of patients suffering from melancholia, and from this series we have selected 150 cases to form the basis for a statistical review of the subject. The desire to present this study and further to emphasize one or two very important facts prompted the writing of this paper.

The material selected was limited to only typical cases of melancholia presenting definite mental symptoms and having no schizophrenic components. Believing that the depressions of manic-depressive insanity and the melancholias of the involutional period of life are manifestations of the same psychopathological mechanism, we accepted cases for this study irrespective of the age at which they occurred. This procedure may be subject to criticism from some psychiatrists, because certain ones have endowed the "melancholias of the period of involution" with a nosological independence, pointing out certain differences that exist between them and the depressions of manic-depressive insanity. However, others maintain that involutional melancholia is merely a subgroup of manic-depressive insanity, and think that the difference between the two is one of degree only. White[1] attributes the large number of depressions occurring during the involutional period to what he calls a "failure of compensation at the psychological level," stating that conflicts which the patients have been able to deal with effectively during the up-hill period of life break through and overwhelm them when the constructive processes begin to fail them after middle age. Gregg[2] states that the use of the term "involutional psychosis" seems unjustified unless it is supported by evidences of physiologic abnormality. We believe with Bleuler[3] that the rigid distinction between the depressions occurring during the course of a manic-depressive psychosis and those coming on in later life can no longer be satisfactorily maintained although the latter do show some slight variations from those occurring earlier in life. They have a more protracted course, they grow more slowly, remain at their height longer, and require a longer time to decline. Single attacks are more common and agitated forms occur practically exclusively during later life.

What constitutes a melancholia? Again we turn to Bleuler,[3] whose description we use because it is comprehensive and brief. In melancholia all experiences are painfully colored and the patient's expression is desperate, painful and anxious. Association of ideas is retarded. Thinking becomes slow and laborious and revolves about the patient's own misfortune. He says, "I think, but I do not get anywhere." All thoughts which are not in harmony with his psychic pain are made difficult, and there is a facilitation of all associations which tend to reinforce his depressed mood. Orientation usually is good but attention remains concentrated upon the imagined misfortune and does not pass readily from one topic to another. This is called hypertenacity of attention. Irresolution may be present to a marked degree, *i.e.*, a patient may want to change his place at the table, lift up a chair, and then require a half an hour trying to decide where he should place it. Delusions occur and their content always is very distressing to the patient. They usually concern economic,

*Read before the Ramsey County Medical Society, St. Paul, June 6, 1927.

bodily, or spiritual ruin. The patients are usually extremely self-accusatory and, in contrast to the paranoiacs, who believe themselves *persecuted*, think that their tortures are well deserved and that they are being justly *prosecuted*. For this reason we use the term "delusions of *prosecution*" rather than "delusions of *persecution*." Weygant[4] gives the following list of delusions that are encountered. The remarks in parentheses are our own.

1. Hypochondriacal delusions (fixed ideas concerning the patient's own body and bodily functions, *i.e.*, stomach, heart, and so forth);
2. Delusions of sinfulness (having committed some unpardonable crime or sin);
3. Delusions of persecution (prosecution);
4. Delusions of poverty;
5. Ideas of unworthiness;
6. Delusions of explanation;
7. Ideas of insignificance;
8. Nihilistic ideas (nothing exists—patient is a small wad of paper or a little ball of yarn, everybody is dead, and so forth);
9. Delusions of possession;
10. Delusions of grandeur.

We have never encountered nihilistic ideas or delusions of possession or of grandeur during the course of a pure uncomplicated melancholia. We believe that they are suggestive of an organic psychosis when they do occur.

In the beginning most cases of melancholia give the impression of a neurasthenia, as do the milder forms throughout their entire course. Passing hysteriform syndromes such as fainting spells and attacks of dizziness also occur. In addition to the emotional depression, the intellectual retardation and inhibition of flow of ideas, there is a physical depression. Most of the patients are underweight, have no appetite, have a slow pulse, a low blood pressure, and a sub-normal temperature. There is a lack of general physical tone, the movements are slow and undecided and the bowels usually are constipated. In other words, the patients are in a state of both mental and physical depression.

With this brief description let us pass on to our series. As before stated, only those cases which conformed to the above concept were included in this study, and all those showing any schizophrenic manifestations (suggesting dementia precox) or exhibiting any signs of organic cerebral disease were not used. Recurrent cases were included irrespective of whether the preceding attack had been mania or depression and only two cases gave a history of a preceding manic attack. One hundred and fifty cases were studied from the standpoint of age, number of preceding attacks, sex, family history, preceding emotional strain, mode of onset, tendency toward suicide, delusions and hallucinations.

AGE INCIDENCE

The ages of our patients ranged from 21 to 65 years, inclusive. The number of cases in each decade was as follows:

Decade	Cases	Percentage
3	16	10.6
4	31	20.6
5	50	33.3
6	44	29.3
7	9	6.0

It is possible that some of the cases occurring during the seventh decade may have been atypical pre-senile psychoses. However, their characteristic symptomatology and the absence of any degenerative manifestations led us to a diagnosis of melancholia in all of these. As can be seen, the peak was reached during the fifth decade (between the ages of forty and fifty), and the average age of all the cases was 44 years and 1 month.

NUMBER OF PRECEDING ATTACKS

W. Bevan Lewis[5] in a study of 83 cases found a history of previous attacks in 38 per cent. In our series, fifty-six cases, or 37.3 per cent, had suffered one or more previous attacks. The distribution according to the number of previous attacks was as follows:

Previous Attacks	Cases	Percentage
0	93	62
1	43	28.7
2	12	8
3	1	0.6

The age distribution of all patients having had previous attacks was as follows:

Decade	Cases	Percentage
3	6	4
4	15	10
5	19	12.7
6	14	9.3
7	2	1.3

If these percentages are plotted in a graph together with a curve showing the age incidence of melancholia in general, it will be seen that the two lines run roughly parallel. In other

words, the recurrent types of melancholia (those giving a history of previous attacks) are found most frequently during the periods of life when melancholia in general are most often encountered. This would indicate that the recurrent types are not peculiar to any one period of life.

SEX

Eighty-five, or 56.6 per cent, were women. This percentage for females is somewhat lower than that given by most authors. Bleuler estimates the percentage of women at 70 per cent. In spite of the fact that there is a great variation in the statistics on this point, everyone is practically agreed that the disease is more common among women than it is among men.

FAMILY HISTORY

Opinions as to the importance of the family history as an etiological factor in melancholia vary considerably. Bleuler[3] states that 80 per cent of the patients are tainted, if the conception of "taint" is not too limited. Menninger[6] believes that the family history is apt to be very bad in melancholia. Piltz[7] found attacks of periodical depression developing in certain families at a certain age regardless of provocative causes. In one family six members had their first attack at the age of 20. They belonged to three different generations. In another family four members developed it at the age of 35. White,[1] on the other hand, believes heredity to play a relatively unimportant rôle in melancholia. Lewis[5] found that only 27 per cent of his cases had a family predisposition to insanity. Again our figures practically coincide with those of Lewis, there being a family history of insanity in only 26 per cent of the cases in our series. Undoubtedly a much larger proportion of the cases have families with a *tendency* toward moodiness and more or less prolonged displacements of the affect —the so-called "syntonic" personalities. It is quite probable that the majority of cases of melancholia have such a family background and are themselves endowed with mental patterns exhibiting a tendency in this direction. However, an accurate statistical determination of the family type was not feasible in all cases of our series, and the family histories were designated as "positive" only in those instances where actual breaks had occurred. Nevertheless, nobody knows how many people with unstable ancestry never experience a mental breakdown, so the other side of the story has never been told and there is no scientific control on our statistical observations. In general, we feel that the importance of heredity in melancholia has been somewhat overemphasized. At any rate, it is not as important in this group as in the psychoses where there is actual mental deterioration, *i.e.*, dementia precox, and so forth.

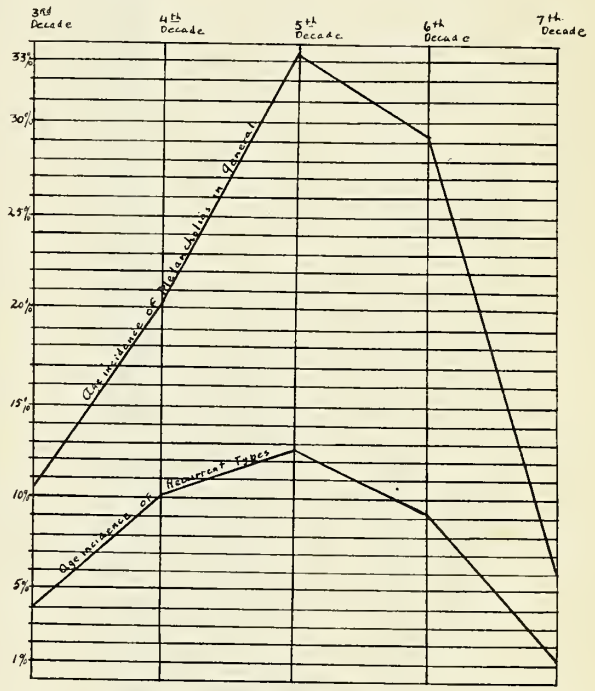

Fig. 1. Chart showing relative incidences of melancholia in general and of melancholias giving a history of preceding attacks (recurrent melancholias). It will be noted that the two lines run roughly parallel. This indicates that recurrent melancholia is not peculiar to any one period of life.

PRECEDING EMOTIONAL STRAIN

Again we must take issue with those who place much emphasis on the importance of emotional strain in the production of a melancholia. By emotional strain we mean any emotional reaction on the part of the individual which was definitely more intense and more prolonged than his usual reactions, the prolonged reaction having been precipitated by some external happening. Naturally, the same event would not cause an emotional strain in every individual any more than the same amount of physical exertion would cause the same degree of muscle soreness in everybody. Whether or not a certain event can be said to have caused an emotional strain in a patient must be left to the judgment of the individual. We usually ask them, "Were

you much upset by it?" or, "Did it cause you any undue alarm or worry?" The most frequent causes for emotional strain in our series were death in the family, financial reverses, business worries, prolonged family quarrels, and unrequited love. We obtained a history of some preceding emotional stress in 30 per cent of our cases.

The importance as an etiological factor in melancholia of a positive family history upon which has been superimposed an unusual amount of emotional stress has been emphasized by White.[1] He states that this combination is responsible for a large proportion of the cases. However, in our series we encountered it in but 9 per cent of the patients.

MODE OF ONSET AND EARLY SYMPTOMS

In the vast majority of cases (over 95 per cent) the onset of the disease was insidious. The early symptoms most frequently complained of were insomnia, headaches, vertigo, gastro-intestinal disturbances, unmotivated depression, and a fear of going insane. The popular lay belief that a person who worries about losing his mind never does so is entirely unfounded, for many patients with marked mental pathology are dominated by that very fear.

TENDENCY TOWARD SUICIDE

Judging from the number of preventable suicides committed almost daily, the tendency toward self-destruction in melancholia is too little recognized. Its importance cannot be overemphasized. Practically every newspaper contains daily accounts of suicides and gives "despondency over ill health" as the cause. It will be noted that most of the victims of this trouble are, or were, in the involutional period of life where melancholias most frequently occur, and we believe that the "despondency" and "ill health" are in reality the symptoms of an already existing melancholia. If these cases are promptly recognized, and their suicidal tendencies realized and properly handled by the physician, most of the attempts at self-destruction will be thwarted. No doctor has discharged his full duty to the patient and to the patient's relatives without impressing upon the relatives the terrible seriousness of this tendency. We consider every melancholic patient as a potential suicide, even when he seems to be almost well. Vigilance should never for a moment be relaxed, because, if a patient wants to take his life he uses just those occasions of which one later says: "But it was only for a moment."

While we consider every one of our melancholias as having suicidal tendencies, in our series 58, or 38.6 per cent, were what we term "definitely suicidal." That is, they had either attempted to kill themselves or threatened to do so on more than one occasion and required special care in psychopathic wards.

DELUSIONS

Delusions were definitely present in 55 cases, or 33.3 per cent. As Bleuler states, they always are of a very distressing nature and usually concern either the spiritual, economic, or physical condition of the patient. "My soul is lost;" "God has forsaken me;" "My money is all gone and my family will starve to death;" or, "My stomach and bowels have collapsed and refuse to work any more," are among the most frequent utterances heard from these patients. Such ideas are quite persistent during the course of the disease, but disappear entirely when the patient recovers.

HALLUCINATIONS

According to our experience, hallucinations in melancholia are not as common as most writers would have us believe. When they do occur we usually are not dealing with a pure form of the disease, but are able to isolate other manifestations of a schizophrenic nature. However, in a few cases of apparently pure melancholia of the unmixed type they do occur and in our series the number was 10, or 6.6 per cent. Of these 10 cases, 7 patients had auditory and 3 patients had visual hallucinations. Some of the so-called auditory hallucinations may have been illusions, but from a practical standpoint this distinction is not important.

PROGNOSIS

Because of the impossibility of following up all of our cases after they left the hospital, and because some of them were transferred to state hospitals and were not heard from again, we could not accurately determine the prognosis by statistical methods. However, we estimated it at about 75 per cent for recovery in the uncomplicated cases. This applies only to the individual attack and does not take into consideration the possibility of recurrences.

SUMMARY

1. Melancholia is a definite clinical entity with a rather characteristic group of symptom complexes running a certain course.

2. It is a sub-group of manic-depressive insanity.

3. One hundred and fifty cases were studied from the standpoint of age, number of preceding attacks, sex, family history, preceding emotional strain, mode of onset, tendency toward suicide, delusions, and hallucinations.

4. The average age of all patients was 44 years and one month. The highest percentage of cases occurred during the fifth decade.

5. Thirty-seven and three-tenths per cent had had preceding attacks. This figure agrees with Lewis' 38 per cent in 83 cases.

6. Recurrent types are not peculiar to any one period of life.

7. Fifty-six and six-tenths per cent were females.

8. A "positive" family history was obtained in only 26 per cent. However, a family "tendency" probably is much more common.

9. The importance of heredity in melancholia has been over-emphasized.

10. The importance of preceding emotional strain has been over-emphasized, a history of such strain having been obtained in but 30 per cent of our cases.

11. Only 9 per cent had a combination of positive family history plus preceding emotional strain.

12. In the vast majority of cases the onset is gradual.

13. There is a marked tendency toward suicide. This is the gravest and least recognized symptom of the disease and its importance cannot be overemphasized.

14. Delusions of a painful nature occur in 33.3 per cent.

15. Hallucinations occur in 6.6 per cent.

16. The prognosis for recovery from the individual attack is conservatively estimated at 75 per cent.

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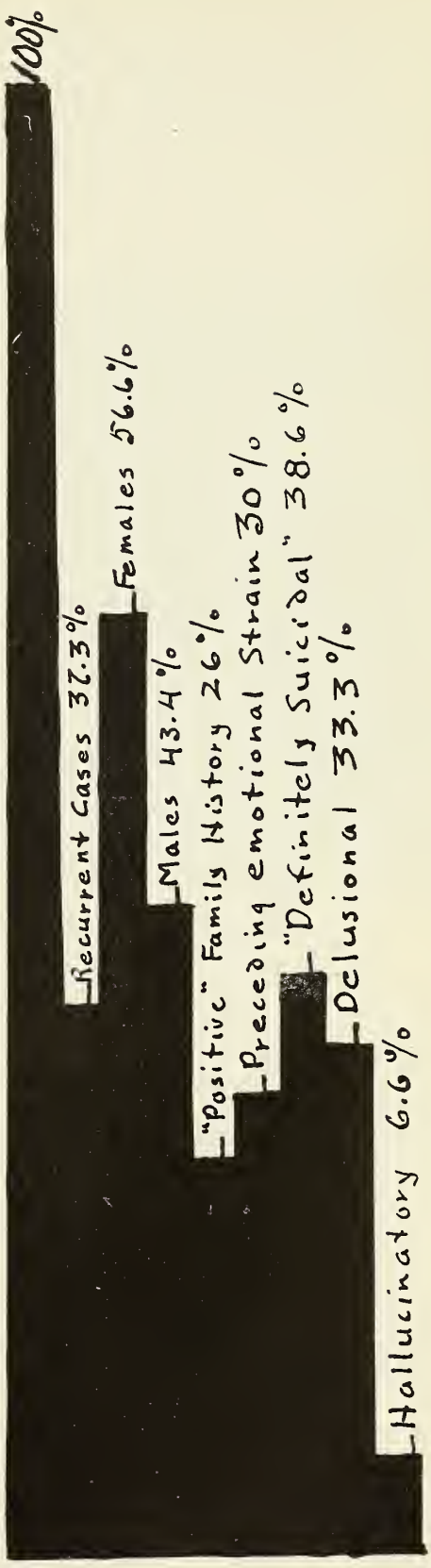

Fig. 2. Percentage incidence of various factors in melancholia.

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THE ORIGIN OF VITAMIN D

The antirachitic substance, vitamin D, occurs in some fish oils—notably in cod liver oil—in egg yolk fat, and to a small extent in milk fat. As a rule the vegetable fats are not antirachitic. A few instances of undoubted potency in oils of plant origin have been ascribed to the effect of solar irradiation of the products incident to their commercial preparation. This is true of cocoanut oil prepared from sun-dried copra. Whereas the other vitamins appear to originate in the vegetable kingdom, this is not the case with vitamin D. Experiments carried out to learn the origin of vitamin D in the cod-fish, raise the question as to whether vitamin D cannot actually be synthesized by certain species. These experiments also revealed that the oils of the herring and sardine rival the cod in antirachitic potency. (Jour. A. M. A., June 4, 1927, p. 1807.)

DESITIN NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Desitin is the non-descriptive name applied to an ointment manufactured by the Chemische Fabrik Desitin Aktiengesellschaft, Berlin-Tempelhof, Germany, and distributed in the United States by the Desitin Chemical Company, Providence, R. I. According to the distributor, there are in 100 parts of Desitin, 28 parts zinc oxide, 14 parts "Bolus alba" (kaolin), 16 parts "Adeps lanæ treated with H_3PO_4 and neutralized with KOH," 22 parts "Cod-liver oil extract, which is purified in a $KMnO_4$ solution and then extracted. This extraction is subjected to a treatment with Cl," and 20 parts "Natural Vaseline." No information was furnished the Council in regard to the actual composition of the cod liver oil extract and an analysis by the "Rijks-Instituut" did not confirm the claimed composition. The ointment is recommended for all sorts of skin lesions and extravagant claims are made for its effects. The Council found Desitin unacceptable for New and Non-official Remedies because the claims made for it are unwarranted. (Jour. A. M. A., Feb. 26, 1927, p. 666.)

HEART-BLOCK OF CONGENITAL ORIGIN*

Report of a Case

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Since the introduction of the polygraph and electrocardiograph, the diagnosis of heart block in adults is quite commonly made. This condition, however, is uncommon in children. The congenital form of atrio-ventricular disassociation is especially rare. Eighteen cases of congenital heart block, which have been verified by polygraphic or electrocardiographic tracings, have been reported in the literature up to the present time. Carter and Howland[1] reported a case of this type in 1920 and collected seven previously reported cases. Meyer[2] quoted by Vaquez, in discussing this subject in 1923, was willing to accept sixteen cases as definitely proved cases of atrio-ventricular disassociation. Romberg and White[3] in 1924 next reviewed thirteen cases and added one of their own. Sprague and White[4] then added an additional case in 1927.

Heart block in children, whether acquired or congenital, differs in some respects from that found in adults. The etiology in adults is practically always some chronic degenerative disease which usually involves the entire cardiovascular system. Most commonly it is caused by a diffuse sclerosis of the coronary arteries and is many times an end-result in a heart that is failing. In children, however, the disassociation is usually found during the course of some acute infection, most commonly in diphtheria or in acute rheumatic fever. Most cases of acquired heart block in children are transitory. If the patient recovers from the acute infection, the block usually disappears and the heart becomes normal. However, some cases have been reported in young adults in whom the block has persisted over a period of years after recovery from diphtheria or acute rheumatic fever. Sprague and White[4] report a case in a young adult in whom a persistent heart block occurred after an injury to the chest. Disassociation of undetermined origin occurs occasionally in both

*From the Lymanhurst School Heart Clinic.

adults and children. Congenital heart block is, of course, always persistent. This disorder practically always occurs in hearts otherwise deformed at birth. It is generally believed that congenital heart block is caused by a defect in the interventricular septum in the neighborhood of the bundle of His or by maldevelopment in the His bundle itself.

Nervous symptoms are common in adult heart block. Fainting spells, convulsions, or the more severe Adams-Stokes syndrome frequently appear in adults. In children, however, nervous symptoms are unusual. The pulse in adults is slower than in children. It is usually below 30 in the adult type but is seldom below 40 in children and is usually between 50 and 60.

The prognosis of the adult form of heart block is always grave as it almost invariably occurs in otherwise badly crippled hearts. In acquired heart block in children, as Sprague and White[4] have pointed out, the prognosis is quite favorable, as in this form of disassociation the heart may not be otherwise seriously damaged. Children with acquired high-grade heart block have been known to lead a fairly active life for years. The prognosis in the congenital form is bad.

A young girl with congenital heart block was studied over a period of two years at the Lymanhurst School Heart Clinic. This case is being reported because of the rarity of this condition and because of its interest.

CASE REPORT

Olga A., nine years of age, was referred to the Lymanhurst School Heart Clinic by the school physician for an opinion as to her heart. The child had reported to school for the first time and was examined to determine whether or not she was physically able to attend school. The family history is unimportant. The following personal history was obtained. The child was born a "blue baby" and she had always been underweight and undernourished. She tires easily although she is able to play ordinary games with other children. She becomes very blue on crying or on exertion. She has a persistent non-productive cough, gets out of breath easily, is very fretful and does not sleep well. She had whooping cough in 1918, measles in 1920, influenza in 1921 and probably pneumonia in 1922. The father thought that the child was able to attend school.

Her physical condition was rather characteristic of a so-called "blue baby." Her face and all the mucous membranes were markedly cyanotic. There was a definite clubbing of the tips of the fingers and toes. The tongue also was very cyanotic. The tonsils were large. The cervical lymph nodes were moderately enlarged. The right ear was discharging a thick, yellowish pus when the patient was first seen. The eyes were somewhat prominent and cyanotic. There was a marked pulsation of the vessels of the neck. It was noted that the jugular pulse was more rapid than the radial, and that some of the jugular pulsations were between radial beats. The jugular pulse was found to be 88 and the radial 44 per minute. The precordium was somewhat prominent and there was a marked systolic thrill over the base of the heart. The

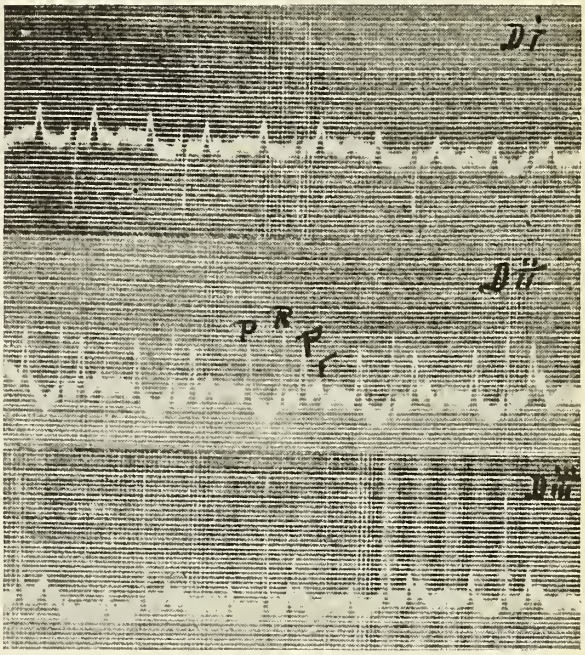

Fig. 1. Rate ventricular 65. Rate auricular 130. P.R. .28 sec. P_1 is exaggerated, P_2 most marked. Inverted T_1. Marked right preponderance. 2:1 heart block.

cardiac area by percussion was 3 cm. to the right and 9 cm. to the left of the mid-sternal line in the fourth space. The heart sounds were slow, regular and of fair quality. There was a prolonged, harsh, loud systolic murmur heard best in the second and third interspaces at the left of the sternum. The murmur was transmitted over the entire chest and also over the back. Moist râles were heard at the bases of both lungs. The liver and spleen were not palpable. There was no edema. A diagnosis of congenital heart disease was made, probably pulmonary stenosis with a 2 to 1 heart block. The 6 foot roentgenogram showed the following measurements: M.L. 8 cm., M.R. 4 cm., transverse chest diameter 21.5. There was a definite prominence of the pulmonary artery and the heart was enlarged to the right and left. The electrocardiographic diagnosis was as follows: Rate ventricular 65; rate auricular 130; P.R. .28 second; P_1 exaggerated; P_2 most marked; inverted T_1; marked right preponderance; 2 to 1 heart block.

In referring back to the hospital records of March, 1922, it was found that this girl had been confined to bed for five days with a temperature as high as 104,

had been delirious, and desperately sick, yet, her radial pulse rate was never over 55. This occurred eight months prior to her first visit to our clinic. The slowness of the pulse was commented on by those who examined her during her stay in the hospital, but no mention was made of a possible heart-block and no electrocardiographic tracings were taken. A diagnosis of congenital heart-disease, probably pulmonary stenosis, was made at that time. The cause of her temperature was not definitely determined, although a roentgen film taken at the time was diagnosed as probable bronco-pneumonia.

The patient continued to return to the clinic at regular intervals. She attended school but was absent a great deal. Her radial pulse rate varied from 44 to 54 but the 2 to 1 heart block was always present. On February 5, 1925, she died suddenly, apparently without having been sick. A post-mortem examination was not obtained.

Many theories have been offered to explain the more rapid pulse and the relative comparative absence of nervous symptoms in children as compared to adults. Volhard and Lian[2] explain the faster pulse by the fact that children normally have a more rapid pulse and therefore a more rapid independent ventricular rate. The nervous symptoms occurring in adults are akin to those occurring in coronary disease in general. Coronary disease is not found in children, and this may explain the absence of the usual nervous symptoms. Carter and Howland[1] in discussing the absence of grave syncopal attacks in children give the following as their reason: "It would seem apparently that as a result of the congenital nature of the lesion the heart early acquired the power of adapting itself to the constant load necessary to maintain an efficient circulation."

The congenital nature of this case may be questioned because of the fact that the slowness of the pulse was not detected before the girl was eight years old and also because she had had several acute infections which may have produced the block. As has already been noted, acquired disassociation in children occurs most commonly following diphtheria or acute rheumatic fever and rarely following other acute infections. This patient had neither diphtheria nor acute rheumatic fever. She did, however, have congenital heart disease and it is reasonable to conclude that this block was of congenital origin in view of the fact that almost all cases of congenital heart block have occurred in children with congenital heart disease.

Heart block of congenital origin is a rare condition which occurs usually in children with other congenital cardiac defects. Children with heart block do not have the nervous symptoms nor the extremely slow pulse commonly found in adults. Whenever a heart rate below 60 is found in a child a possible heart block should be considered.

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EDITORIAL

Contract Practice

The Washington County Medical Society recently took action in the matter of a certain form of contract practice. For a number of years there has been flourishing in Stillwater a certain fraternal order whose main talking point in the acquisition of new members was the free medical service included in membership. A local physician until recently was retained by the fraternal order for the annual rate of $2.00 per member. For this fee the physician agreed to furnish medical services to the member and his family, obstetrical, *x*-ray and venereal care being excepted. One contracting physician figured he received on an average of nine cents a call for his services.

The local county society recently took a very decided stand in the matter and prevailed upon the contracting physician to resign. To avoid any further misunderstanding as to what physicians in Washington county consider proper remuneration for their services a minimum fee schedule effective August 1, 1927, was adopted by the society and a copy sent to the fraternal order with a letter of explanation.

As far as we know, no other county society in the state has as yet adopted a fee schedule but we believe others will follow suit. Much medical practice today involves relations with various types of medical insurance. In each locality there is a fairly well established scale of charges for medical services which the physicians of the locality have adopted through usage and not through official society sanction. The official adoption of a schedule of minimal fees by each county society for use particularly in connection with insurance cases might simplify two phases of a very vital problem. There would be little excuse for cut-rate arrangements such as are commonly made by certain individuals in each community. What often happens is that such individuals become so busy that they give services just about commensurate with the cut fee. This is not in the interests of the patients, physicians or insurance companies. In the second place, there would be little excuse for an insurance company's trying to "jew" the doctor down or to dictate medical fees. In industrial cases in Minnesota the insurance company or representative selects the physician and according to a ruling of the Workmen's Compensation Commission can insist on the patient's using the company's physician and refuse to pay the individual's private physician. As far as we know, however, there is no law in Minnesota covering this important point. With a minimum fee schedule there would be little excuse for such a ruling. Doubtless some physicians are tempted to charge insurance companies more than minimum fees, even excessively at times. A fee schedule adopted by the local county society would eliminate much of the unnecessary friction in existence.

Certain physicians who have had considerable experience with medical insurance work believe minimal fee schedules imperative. We are inclined to agree. There would be nothing in such

a procedure to prevent an individual physician from reducing his charge as at present where inability to pay minimum fees is apparent nor charging more than the minimum rate where conditions warrant it.

The Kahn Precipitation Test for Syphilis

Since the discovery of the spirocheta pallida an important place in the medical world has been occupied by laboratory tests for syphilis, and of these the best known, the Wassermann reaction, has been very generally recognized and accepted by the patient as well as the physician. Due to its empirical nature, however, its complicated reagents and its lack of standardization, it has not proved to be entirely satisfactory and there has been stimulated an active interest in other tests for the diagnosis of the disease. The precipitation test has been used by various investigators but it has remained for Dr. R. L. Kahn, working at the Michigan State Board of Health, to devise and perfect the precipitation test which has proven to be the most satisfactory and which is becoming very generally recognized throughout the country. The technic and details of his work have been given in many articles published in current medical journals during the past five years as well as in his recent monograph, "Serum Diagnosis of Syphilis by Precipitation" (Williams and Wilkins Co., 1925).

The test is very simple and consists of the inactivated serum from the patient to a diluted antigen similar to that used in the Wassermann. After a thorough shaking for two minutes and a short time of standing the positive cases show a white precipitate and the negative ones merely an opalescence. It may be run as either a quantitative or qualitative test and skill is necessary only in experience in reading the reaction as well as in recognizing and preventing atypical or false precipitation in the antigen. The advantages of the test are the extreme simplicity, the short time involved, the single reagent and the reliability which has been proved by many observers who have been running it in conjunction with the Wassermann reaction. It agreed with the Wassermann in over 90 per cent of cases and it is more sensitive in early or in treated cases. In the Michigan State Board of Health Laboratories it has entirely replaced the Wassermann and has been officially recognized by the Navy where it may be used in many places where reagents and conditions necessary for the Wassermann are not available. However, the majority of the diagnostic laboratories are not yet ready to give up the well established, even though not entirely satisfactory, Wassermann reaction for the newer, less well known, Kahn precipitation test, and so they run both together, using one as a check upon the other. That it has been so generally accepted and that it occupies so prominent a place in the literature of the day, speaks well for it and it may not be too presumptuous to predict that in the not too distant future it may entirely supersede the old Wassermann reaction in the laboratory diagnosis of syphilis.

MARGARET WARWICK, M.D.

Eduard Boeckmann

Dr. Eduard Boeckmann is dead. Those rugged Norseman who tilled the virgin soil of our Northwest were his people. He watched their passing, their backs bent with age, their hands gnarled from ceaseless toil, until at last his end had come. Those who still remain will bear with heavy hearts the passing of this great soul.

Nature had richly endowed him. That robust constitution permitted long hours of labor with little rest. From his early years to advanced age he worked long into the night. Frequently in the early morning hours he could be found studying scientific literature or in the preparation of medical works. Gifted with a brilliant mind, his faculty for clear and consecutive thought made him the great physician that he was. His originality, tenacity of purpose, dogged perseverance and independence of thought resulted in attainments for which he was widely known.

He was possessed with an indomitable will and pride that were his heritage. His moral courage should be the envy of all men for he feared no one. His intimates were few, his friendship enduring. In defense of a friend he would stand alone, if need be, for his knowledge of human frailties made him the magnanimous spirit that knows no creed.

His sincerity none will question; he was honest to a fault. Simple in manner and frank in expression, he had a rightful repugnance for ostentation and false show. He repelled the rich

and invited the poor. He appraised the character and not the wealth.

Charity was his religion. What greater virtue hath any man? His benefactions were countless and so unselfishly bestowed that they were part and parcel of the man.

Within that virile frame was a soul of human kindness. The children gathered around him; the aged loved him. With them he was capable of womanly tenderness.

His love for the land of his birth was a ruling passion. He loved her art, her music, her literature and her people. Often in the company of a friend he would read aloud with tearful eye and quivering lips Ibsen's Peer Gynt. To talk with his people in their native dialects was to him a source of delight. It carried him back to the districts from whence they came, reminiscences of his boyhood days.

Surrounded by the cultural refinement brought from the old world, blessed with a most devoted wife and happy children, his domestic life flowed smoothly on its course.

His lavish hospitality and sumptuous entertainments are traditional. Noted men of his day graced his table, there to feast on the greatest delicacies, the rarest wines. His conviviality, mingled with his erudition, epigrammatic phrases and witty sallies made him the king of hosts, a prince of good fellows.

We, the physicians of the Northwest, offer to his noble wife and his children our sincerest sympathy in the hour of their bereavement. They and their progeny can speak with pride of the works of Dr. Eduard Boeckmann, the philosopher, the great physician, the great humanitarian.

Paul Dee Berrisford, M.D.

LIMITATIONS OF GOITER PROPHYLAXIS

Government authorities believe that there is no reason for speeial goiter prevention measures on the part of the state and loeal health departments. They do not see any necessity for universal prophylaxis sueh as may be attained by iodization of table salt or municipal water supplies. There is a growing opinion that the administration of iodine as a means of preventing goiter should be under the guidance of physieians and should be individualistic. In this way mueh good may be aceomplished. (Jour. A. M. A., July 9, 1927, p. 114.)

MISCELLANEOUS

SOME SUGGESTIONS CONCERNING THE MINNESOTA BASIC SCIENCE LAW

E. A. Meyerding, M.D.
Seeretary Minnesota State Medieal Assoeiation

The new Basic Science Board ereated by the last legislature is now in full operation and has headquarters at the offiee of the seeretary and treasurer, Dr. T. E. Bell, 110 Anatomy Building, University of Minnesota Campus, Minneapolis, Minnesota.

Applieation blanks and a letter of instruetion have been sent to all physieians in the state. Upon reeeipt of your applieation blank it is important that you have it eompletely filled out and that you return it immediately to Dr. Bell's office with your three dollar check; failure to do so before Oetober 1, 1927, will require a registration fee of $25.

The following are some of the questions that have eome to both the Basic Seienee Board and the Seeretary of the State Association:

1. Where do your register?

At the offiee of Dr. E. T. Bell, Seeretary-Treasurer, 110 Anatomy Building, University of Minnesota Campus.

2. What is the fee?

Three dollars must accompany the application blank. After Oetober 1, 1927, it will be $25 for those who have failed to register.

3. My license is not registered with the Clerk of Courts.

Your lieense must be registered with the Clerk of Courts, and he must also fill out the eertifieation on the bottom of the application of the Basie Seienee registration blank before it is sent to the seeretary of the Basie Scienee Board.

4. My residence is in an adjoining state and I have a Minnesota lieense so that I ean praetiee on both sides of the boundary?

You must register your Minnesota license with the Clerk of Courts in the Minnesota eounty in which you do most of your praetieing.

5. I failed to register my lieense with the Clerk of Courts and it has disappeared?

Write the secretary of the Minnesota State Board of Medieal Examiners, Lowry Building, St. Paul, Minnesota, and ask for a eertified copy. This will be sent to you and must then be registered with your County Clerk of Courts.

6. Supposing I do not receive an application blank from the seeretary of the Basie Science Board?

If you have not reeeived an application blank from the Basic Scienee Board, write the secretary's office at onee asking for same.

There may be some physieians who will not reeeive the applieation blank from the Basic Scienee Board due to the faet that no one knows at this time who is en-

titled to practice in Minnesota. The principal reason for requiring registration is to obtain such information.

The Basic Science Board is taking the American Medical Directory as their basis of procedure. If you should have occasion to know that your name is not in the directory, by all means write the secretary of the Basic Science Board for your application at once.

7. Does the new Basic Science Law affect the license of physicians already licensed in Minnesota but living in other states?

Yes. It is necessary that you file your license with the Clerk of Courts in the county you expect you may return to and make application for registration in the Basic Science Board the same as any licensed physician in Minnesota.

8. What am I to do with the Basic Science certificate when I receive it?

You must register with the County Clerk of Courts within 30 days.

9. Many are sending their application blanks in to the secretary of the Basic Science Board incompletely filled out?

Failure to give the complete information required by law to the secretary of the Basic Scienc Board will necessitate the payment of $25 after October 1, 1927, to complete the operation. Even if you have previously sent in the three dollars, this does not save you after October 1, 1927, unless you have your registration certificate.

10. What information is most commonly missing from the application blank?

The date and number of your state license and the failure to have filled out your certificate by your local County Clerk of Courts.

11. The next examination of the Basic Science Board will be October 1, 1927, at the University of Minnesota.

Note: The Basic Science Board has consulted with the Attorney General before outlining their procedure for registration.

LEGISLATION AND THE DOCTOR*

A short time ago a noted member of the legal profession in New York City used the following words in speaking of the regulation of physicians by law: "Members of the medical profession are at times prone to lose sight of the extent to which they are subject to control by public authorities. There is no inalienable right to practice medicine. The right springs from a license granted by the state under regulations prescribed by the authorities. The only fundamental right of the individual which underlies the license is that it may not be withheld as a result of discrimination. A statute regulating the right to practice medicine but leaving the field open to all who possess the prescribed qualifications is sufficient."

That is exactly what the Basic Science law of Minnesota provides for. To my mind there are two outstanding features of the Basic Science law. The first is the definition of 'The practice of healing.' This definition is so broad and absolute that there can be no doubt as to what the legislature intended. They intended that definition to be so clear cut and understandable that there never will be any controversy about it. They meant—"any person who shall *in any manner* for any fee, gift, compensation, or reward hold himself out to the public as being engaged in the profession of healing, and they fully intended that this law should properly regulate any person so doing. The other outstanding feature of this law is the section requiring every practitioner of healing in the state to register annually. This requirement provides a means by which the Licensing Boards, who are now made in a measure responsible for the enforcement of the law, can keep in touch with legal practitioners. It will be a great aid in keeping a correct roster of addresses. The State Board of Health is required to publish annually a complete list of all regularly licensed practitioners. The importance of having such a correct list made public needs no argument. It would enable the board to discover cases of individuals using licenses of others. It will enable the separate boards to control unethical practitioners, affording said boards opportunity to consider whether it was desirable to permit continuance of such an individual in the practice of this profession. The annual registration fee will furnish funds for this powerful policing agency. It may be worth while to note that the annual registration fee is $5.00 for the years 1928 and 1929, and $2.00 per year thereafter. It is strictly in line with the best practice in other professions or trades. This plan is favored at the present time by many leaders of the medical profession throughout the country who realize the pressing importance of thorough supervision of those who claim the privilege of the physician.

Charles Bolsta, M.D.

*Remarks made at the annual meeting of the Minnesota State Medical Association, Duluth, Minn., June 30 to July 2, 1927.

TWO OBESITY FAKES DODGE FRAUD ORDERS

The Post Office Department called on the Hall Chemical Company, which sells the obesity preparation, Hall's Tablets Triturates, to show cause why a fraud order should not be issued against it. The proprietor of the company submitted an affidavit declaring that the sale through the mails of Hall's Tablets Triturates had been abandoned. Similarly the firm which exploits "Slends," a chewing gum coated with a mixture containing sugar and phenolphthalein, when asked why a fraud order should not be issued for selling Slends through the mails, submitted an affidavit declaring that the business of selling Slends through the mails had been discontinued. There is, of course, nothing in the action of either firm to prevent the sale of the products in question through the drug stores. (Jour. A. M. A., July 9, 1927, p. 138.)

OBITUARY

Eduard Boeckmann

Dr. Eduard Boeckmann, 78 years old, widely known physician in the Northwest and a pioneer in medicine in Ramsey county, who had been a resident of St. Paul since 1887, died after a heart attack August 8, 1927, at the home of his son, Dr. Egil Boeckmann at Dellwood, White Bear lake.

He is survived by his widow, three daughters and a son. The daughters are: Mrs. Charles Freeman and Mrs. Clarence Freeman of St. Paul, and Mrs. Helga Suiler of Munich, Germany.

Dr. Boeckmann was a leading spirit in the founding of the St. Paul Hospital, was once chief medical officer in the Minnesota militia, and was a colonel in the medical corps during the Spanish-American war. For accomplishments in the field of surgery and medicine he received high honors in his native country, Norway.

One of the marvels to his associates in late years was Dr. Boeckmann's vigor, enthusiasm and acumen in the continued practice of his profession, despite his advancing years.

Dr. Boeckmann was born in Totn, Norway, March 25, 1849. He was the youngest of 10 children, and his father was an officer in the military service. After being privately tutored, he studied medicine at the University of Christiania. After his graduation he was a member of the staff of the hospital for lepers at Bergen, and later at St. Jorgen's hospital in the same city. His outstanding research work won him his medical degree.

As one evidence of his many services to the medical profession may be cited Dr. Boeckmann's gift 20 years ago to the Ramsey County Medical Society of his discovery of a new and improved method of preparing catgut for surgical use. Through the sale of this product the county society has been able to acquire a large library building fund, known as the Boeckmann Library Building fund.

As a means of relaxation from his strenuous medical practice, Dr. Boeckmann always had some diversion which absorbed his attention. For a time he was enthusiastic over a trout farm in Wisconsin, then over raising fancy chickens, and later, pure bred cattle.

Dr. Alfred B. Hart

Dr. Alfred B. Hart was born in Steele County, Minnesota, in Havana township, Dec. 7, 1868. He was the son of Mr. and Mrs. Andrew J. Hart, his father being a farmer, as well as a carpenter and builder. While he was still a baby, the family moved to Owatonna, where they lived till he was four years old, when they moved to Minneapolis. There he grew up, attending the public schools in Minneapolis till he became a young man, when he entered the Shattuck School for Boys at Faribault, where he graduated. Later he entered the University of Minnesota where he graduated in pharmacy, and became a registered pharmacist.

Alfred Hart owned and operated a drug store on Nicollet Avenue in Minneapolis for eight years a part of which time he spent in the study of medicine and surgery at the University of Minnesota, graduating in the class of 1903. He sold his drug store about a year before his graduation.

Doctor Hart was married to Miss Alice M. Sandberg, Nov. 2, 1898. Following his graduation in 1903 he moved to Canton, Minnesota, and practiced medicine there for eight years. He also practiced in Pequot for a year and a half. He came with his family in February, 1913 to Owatonna, where he lived to the time of his death. After an illness of several months duration he passed away May 10, 1927, at his home in Owatonna, and was laid to rest in Forest Hill Cemetery. Surviving him are his wife; one son, Alfred B. Hart, M.D., Jr., who is practicing here; one daughter, Virginia M. Hart, who is attending Carleton College; a grand daughter, Eleanor M. Hart, and a sister, Mrs. Will Brown, of Minneapolis.

From time to time, as The Last Great Honor Roll of Physicians is extended, we members of the Steele County Medical Society are called upon to mourn the loss of a member. We are wholly unable, by means of any words at our command, adequately to express the sorrow we feel when one of our honored members is taken from us.

During life, we may not always appreciate the full value to us of the medical associates with whom we are thrown into daily contact, and often neglect to speak those words of commendation and of appreciation which may justly be deserved. But after the death of one of our confreres, little by little, as we take time for reflection, one thing or another brings up in our minds how much we really owed him.

Dr. Alfred B. Hart was a physician of ability. He was always a real gentleman. He was always modest about his capabilities, and never boastful of his successes. He was an honored and respected member of the Steele County Medical Society, of the Minnesota State Medical Association and of the American Medical Association.

C. W. Roberts, M.D.

Jonas M. Kistler

After an illness of three days, Dr. J. M. Kistler, 71 years old, former Hennepin county coroner and for years a prominent Minneapolis physician, died Saturday, August 13, 1927, at the Swedish hospital. Dr. Kistler was born in Schuylkill county, Pennsylvania, September 5, 1856, and was a descendant of one of the old pioneer families of that state, the first representative having come to America before the Revolutionary War. His youth was spent upon his father's farm. He at-

tended the public grade schools and the Lehighton high school, completing his preparatory work there, taking up the profession of teaching, which he followed for six years in the rural schools of the county. Later he entered the Keystone State Normal School to prepare himself further for his chosen profession of teaching and graduated in 1890, but before he had completed his course there, he decided to take up the study of medicine.

He then entered the Franklin and Marshall College of Pennsylvania for two years and obtained his degree of doctor of medicine from the Jefferson Medical College of Philadelphia with the class of 1883. He came to Minneapolis in June of that year and entered immediately upon the active practice of medicine.

Dr. Kistler was a member of the Hennepin County Medical Society and the Minnesota Medical Association, as well as a member of the Elks, and the Independent Order of Odd Fellows.

Elected a member of the city council from the fourth ward in 1912 he served two terms as an alderman. In 1894 he was first elected to public office when he was chosen county coroner for one year. He was again elected to the same office in 1905 and continued in that capacity for three years. For six years to 1919 he was chairman of the health and hospitals committee of the board of health and when that board ceased to exist in 1919 and its duties were placed under the newly created board of public welfare, Dr. Kistler was made a member of that body and served until 1922.

He is survived by his wife, Minnie, and four children, Dr. Alvin J. Kistler, Mrs. J. B. Greathouse and Mrs. Douglas Larson, all of Minneapolis; four brothers and one sister, A. Kistler, Seattle; D. J. Kistler, Lehigh, Pa.; Charles M. Kistler, Minneapolis, and Mrs. Ella Kistler, St. Paul.

Dr. George H. Simon

Dr. George H. Simon of Saint Paul died Saturday, August 6, 1927, at the age of 45 years.

Dr. Simon was born May 2, 1883, at Winona, Minnesota, where he received his early education. He was graduated in 1909 from the medical school of Northwestern University and served his internship at the Milwaukee County Hospital in Wauwatosa, Wisconsin. During the following five years he was located at Tampa, Florida, where he was pathologist of the Florida State Board of Health. In 1914 he moved to Saint Paul and engaged in private practice. In 1919 Dr. Simon was made assistant director in the medical department of the Twin City Rapid Transit Company, a position he held at the time of his death.

Dr. Simon was a member of his county and state medical associations, a member of Nu Sigma Nu medical fraternity, and of the Scottish Rite and Shrine of the Masonic order.

Dr. Simon is survived by his widow, three brothers, Dr. B. F. Simon, Almon R. Simon and Dr. E. J. Simon of Saint Paul and four sisters.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Northern Minnesota Medical Association will be held at St. Cloud, Minnesota, Monday and Tuesday, September 12 and 13, 1927.

The meeting is to be a combined clinical and didactic session.

Clinics will be held as follows:

1. Medical Clinic
   Dr. J. P. Schneider, Minneapolis, Minnesota.
2. Pediatric Clinic
   Dr. O. W. Rowe, Duluth, Minnesota.
3. Surgical-Pathological Demonstration
   Dr. A. A. Zierold, Minneapolis, Minnesota.
   Dr. W. A. O'Brien, Minneapolis, Minnesota, University of Minnesota.
4. Dermatologic Clinic
   Dr. H. E. Michelson, University of Minnesota, Minneapolis, Minnesota.

The following program of papers has been arranged:

1. "Osteomyelitis in the Superior Maxilla in Children, with Presentation of Two Cases."
   Dr. Thos. N. Fleming, St. Cloud, Minnesota.
2. "Cerebro-vascular Lesions in the Aged."
   Dr. L. R. Gowan, Duluth, Minnesota.
3. "Neuro-syphilis."
   Dr. W. H. Hengstler, St. Paul, Minnesota.
4. "Headaches from the Neurologic Standpoint."
   Dr. Gordon Kamman, St. Paul, Minnesota.
5. "Recent Advances in Contagious Disease Therapy."
   Dr. E. S. Platou, Minneapolis, Minnesota.
   Dr. C. A. Stewart, Minneapolis, Minnesota.
6. "Appendicitis in Childhood."
   Dr. R. L. Kennedy, Mayo Clinic, Rochester, Minnesota.
7. "Postoperative Ileus."
   Dr. C. O. Estrem, Fergus Falls, Minnesota.
8. "Inguinal Hernia Under Local Anesthesia, and Advances in Technic—A Report on 700 Cases."
   Dr. S. R. Maxeiner, Minneapolis, Minnesota.
9. "Newer Aspects in the Diagnosis and Treatment of Chronic Cholecystitis."
   Dr. M. O. Oppegaard, Crookston, Minnesota.
10. "Newer Aspects in the Surgical Treatment of Pulmonary Tuberculosis."
    Dr. L. E. Daugherty, St. Paul, Minnesota.
11. "Pathological and Clinical Study of 400 Cases of Primary Hypertension."
    Dr. E. T. Bell, University of Minnesota, Minneapolis, Minnesota.
12. "The Various Forms of Bladder Neck Obstruction."
    Dr. F. E. B. Foley, St. Paul, Minnesota.

13. "Preoperative Care of Prostatic Patients."
Dr. F. R. Wright, Minneapolis, Minnesota.
14. "Tularemia in Northern Minnesota."
Dr. L. L. Merriman, Duluth, Minnesota.
15. "Principal Considerations of Heart Pain."
Dr. W. H. Long, Fargo, North Dakota.
16. "Cardiac Neurosis."
Dr. F. A. Willius, Mayo Clinic, Rochester, Minnesota.
17. "Medical Charities—A Medical Economic Discussion."
Dr. C. R. Christenson, Starbuck, Minnesota.
18. "Diagnostic Dialogue."
Dr. S. Marx White, University of Minnesota, Minneapolis, Minnesota.
19. "Diagnostic Dialogue."
Dr. E. L. Tuohy, Duluth, Minnesota.
20. "The Doctor's Viewpoint."
Dr. George Earl, St. Paul, Minnesota.
21. "Medical Legislation."
Dr. W. F. Braasch, Rochester, Minnesota.

The banquet will be held Monday evening, Dr. E. L. Tuohy of Duluth acting as toastmaster. Following the banquet Dr. W. W. Will of Bertha will give the presidential address which will be followed by a medical address by Dr. C. S. McVicar of Rochester and a lay address by Bishop Bennett of Duluth.

AMERICAN HOSPITAL ASSOCIATION

The twenty-ninth annual convention of the American Hospital Association will be held in Minneapolis, October 10 to 14, inclusive. Headquarters will be at the Minneapolis Municipal Auditorium, where all the sessions and exhibits will be held.

The morning of the first day will be devoted to administrative affairs and registration. The Social Service section will hold its meeting in the afternoon, the formal opening of the general session of the convention to take place at 8 o'clock Monday evening in the General Assembly Hall.

Tuesday morning and afternoon will be occupied with committee reports. Dr. R. O. Beard of Minneapolis, Professor Emeritus of the College of Medicine, University of Minnesota, will give a paper at the afternoon session on "The library in the hospital."

At the banquet and reception to be held at the Hotel Radisson Tuesday evening, Dr. Morris Fishbein of the American Medical Association, Chicago, will address the guests on "The hospital and the community."

The Wednesday morning session will be devoted to committee reports with papers by Dr. Ernest P. Boas of Montifiore Hospital, New York City, and a representative of the American Association for Community Organization. Wednesday afternoon the Administrative section will discuss the subjects "Hospital income," "Hospital expense," and "Can hospital productivity be measured?" Dr. E. H. L. Corwin of the Academy of Medicine, New York, will lead in the discussion of the last mentioned subject.

Wednesday evening two sections will convene simultaneously. The Out-Patient section will meet in the General Assembly Hall and the Small Hospital section in Meeting Hall "A."

A symposium on "Tuberculosis sanatoria" has been planned for Thursday morning. Those contributing to the program are: Dr. Ernest S. Mariette, Oak Terrace, Minnesota; T. B. Kidner, New York City; Dr. A. J. Davis, Farmingdale, New York; Dr. E. P. Boas, New York City; Charlotte Janes Garrison, R. N., New York; Dr. J. A. Myers, Minneapolis.

Thursday afternoon the Construction section and Out-Patient section will hold round table discussions. Thursday evening the Nursing section and Trustee section will convene.

Reports of committees will be given at the General Session to be held Friday morning. The final session and business meeting will close the convention Friday afternoon.

Other organizations which will meet in conjunction with the American Hospital Association include the Children's Hospital Association of America, the American Association of Hospital Workers and the American Occupational Therapy Association.

INTERSTATE POST GRADUATE ASSEMBLY OF NORTH AMERICA

The annual meeting of the Interstate Post Graduate Assembly which met two years ago in Saint Paul will be held this year at Kansas City, Missouri, October 17 to 22 inclusive. Clinics in the various Kansas City hospitals will be held the two days in advance of this meeting.

A long list of eminent foreign authorities who will take part in the program this year appeared in the June number of the journal. The meeting this year promises to surpass those of previous years both as to the character of the program and attendance.

KOCH CANCER FOUNDATION

On September 22 and 23, according to an announcement just issued, the second annual convention of the Koch Cancer Foundation will take place in Chicago, one of the meetings being a joint session with the American Association for Medico-Physical Research. The American Association for Medico-Physical Research was organized in 1911 by the outstanding quack of the century, Albert Abrams. It is stated that some three hundred physicians will gather to discuss the use of the Koch remedy in cancer. But one meeting is to be a joint meeting with the distinguished members of the American Association for Medico-Physicial Research. The Koch representatives should add tone to this remarkable assemblage. (Jour. A. M. A., July 23, 1927, p. 296.)

OF GENERAL INTEREST

A daughter was born to Dr. and Mrs. H. H. Bowing of Rochester, Minnesota, Monday, August 1.

Dr. G. J. Ferreira of Aurora has been appointed county health officer of St. Louis county, succeeding Dr. H. G. Lampson, recently deceased.

Dr. and Mrs. Arnt G. Anderson of Minneapolis have returned from a three months' stay in Europe, where Dr. Anderson visited the leading medical centers.

Dr. Robert Emmett Farr, Minneapolis, who was incapacitated for several months on account of a streptococcic infection of his leg, resumed practice August 1.

Dr. Ralph D. Bergen and Miss Elizabeth Goggins of Rochester, Minnesota, were married Tuesday, August 2, 1927. Following a motor trip through the West, they will be at home in Rochester.

Dr. H. D. Diessner of Minneapolis has returned from Vienna, Austria, following a three months' study in Vienna and Berlin clinics. Dr. Diessner has resumed his practice at 341 La Salle Building, Minneapolis.

Dr. E. J. Witzemann left Rochester August 1 for Madison, Wisconsin. Dr. Witzemann will be associated with the department of physiological chemistry in the Medical School of the University of Wisconsin.

The wedding of Miss Mary Kahler and Dr. Philip S. Hench of Rochester took place Thursday afternoon, July 14, at the home of the bride's parents in Rochester. Dr. and Mrs. Hench are now at home in Rochester.

Announcement has been made of the marriage of Miss Edna Pearl Mount of Aitkin to Dr. Milton Kerlan of Moose Lake, which took place July 10, 1927, at Duluth. Dr. and Mrs. Kerlan will make their home in Moose Lake.

Dr. J. R. Coffey, formerly of Rochester, Minn., has moved to Portland, Oregon, where he will enter the practice of surgery with his father. Dr. Coffey has been a fellow in the Mayo Foundation since the summer of 1924.

Announcements have been received of the marriage of Dr. Melvin W. Binger of Rochester, Minn., to Miss Joy Amalie Hoffhine, Wednesday, July 20, at Beatrice, Nebraska. Dr. and Mrs. Binger will return to Rochester the first of October.

Dr. C. Sneed Williamson has been appointed head of the department of surgery at the University of Arkansas Medical School in Little Rock. Dr. Oliver C. Melson has lately been appointed head of the department of medicine in the same University.

Dr. and Mrs. A. H. Parks and daughter, Miss Jean Parks, are touring in Holland, Germany, Switzerland and Italy. They will take a twenty-seven days' cruise on the Mediterranean and will visit the Holy Land and Egypt before returning to the United States by way of Havre, France.

Dr. Earl Lowe of St. Paul is the inventor of a steel mesh glove which will turn the keenest blade. The glove is intended for the use of meat cutters and was devised by Dr. Lowe after he had had occasion to treat a number of cases of hand and arm cuts among packing house employes.

Dr. James M. Murdock of Franklin, Pennsylvania, has been appointed superintendent of the school for the feeble-minded at Faribault, succeeding G. A. Hanna, recently resigned. Dr. Murdock was formerly superintendent of the Polk School for the Mentally Defective in Pennsylvania.

"In recognition of his scientific work in the domain of pathology," Dr. Louis B. Wilson of Rochester has been elected an honorary member of the Czech Medical Society of Prague. This society was founded by the famous physiologist, J. E. Purkinje, who was its president until his death in 1869.

Dr. H. F. Wilkinson, who has been a Fellow in Otolaryngology in the Mayo Foundation since July, 1924, left last month for Chicago. Dr. Wilkinson has been appointed Assistant Professor in the Department of Surgery, in charge of the work in otolaryngology, at the Medical School of the University of Chicago.

Dr. W. D. Sheldon, Rochester, Minn., sailed July 14 for Europe. He attended a joint meeting of the Section on Neurology of the Royal Society of Medicine and the American Neurological Association in London from July 25 to 28. Dr. Sheldon will also spend some time in Freiburg, where his son is a student. He will be away for three or four months.

Work was begun in July on the construction of a $200,000 building for the Children's Hospital in Saint Paul, on Pleasant Avenue near Walnut Street, replacing the present temporary structure which has housed the institution the past three years. The building is to be completed next spring. The building will accommodate 75 persons and later can be enlarged if deemed advisable.

According to an opinion of the attorney general, Clifford L. Hilton, given August 10, 1927, naturopaths must pass an examination in the basic sciences in order to practise in Minnesota. Because naturopaths were neither licensed nor registered prior to May first, when the basic science act went into effect, naturopaths must obtain a basic science certificate in order to meet the requirements of the law.

In accordance with the law passed at the last meeting of the Minnesota legislature, every physician who wishes to retain his license to practice in Minnesota must secure a certificate from the Board of Examiners in the Basic Sciences before October the first, 1927. The secretary of this Board is Dr. E. T. Bell, 110 Anatomy Building, University of Minnesota Campus, Minneapolis, Minnesota. Applications have been sent to all physicians whose names appear in the directory of the American Medical Association as residing in Minnesota. Members of the State Association are requested to send in the names of any doctors they may know who have not received applications.

NEW AND NON-OFFICIAL REMEDIES

The following article has been accepted by the Council on Pharmacy and Chemistry:

LEDERLE ANTITOXIN LABORATORIES:

Erysipelas Streptococcus Antitoxin (Lederle) Unconcentrated

TRUTH ABOUT MEDICINES

Crotalus Antitoxin.—An antitoxic serum prepared by immunizing animals against the venom of snakes of the crotalus family. Evidence has accumulated to show that the venom of certain snakes may be neutralized by the employment of a serum obtained from animals that have been injected with venom from a snake of the same family. Crotalus antitoxin is used to neutralize the venom injected by the bite of members of the crotalus family. The serum is administered intramuscularly, subcutaneously and in certain cases it may be administered intravenously.

Antivenin (Nearctic Crotalidae)—North American Anti-Snake-Bite Serum.—An antitoxic serum prepared by injecting horses with venoms from serpents of the North American species of the family *Crotalidae* (Rattlesnake, 75 per cent; Copperhead, 12½ per cent; and Water Moccasin, 12½ per cent). It is claimed to have neutralizing effect against the venom of the species represented. The serum is marketed in syringes containing 10 c.c. (a single dose). H. K. Mulford Co., Philadelphia. (Jour. A. M. A., July 2, 1927, p. 29.)

Erysipelas Streptococcus Antitoxin (Lederle) Unconcentrated.—An erysipelas streptococcus antitoxin (New and Non-official Remedies, 1927, p. 337) prepared by immunizing horses by subcutaneous injections of the toxic filtrate obtained from broth cultures of the erysipelas streptococcus, or by intravenous injection of cultures of the erysipelas streptococcus obtained from typical cases of erysipelas. It is administered in early cases of moderate severity in dosage of 12 c.c. intramuscularly; in severely toxic and late cases, 36 c.c. to 48 c.c. intramuscularly, or 24 c.c. to 36 c.c. intravenously. This product is marketed in syringes containing 12 c.c. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., July 30, 1927, p. 373.)

THE "ADJUSTO" ("JUVENATOR")

This is another indecent swindle barred from the mails. One G. R. Damiani, who seems to have done business variously under such trade names as G. Lotto, Olds Appliance, Wisett Manufacturing Co., and Sampson Manufacturing Co., all of St. Louis, Mo., have exploited the device called the "Adjusto" and the "Juvenator." Now a fraud order has been issued against the Sampson Manufacturing Company and G. R. Damiani. (Jour. A. M. A., Feb. 12, 1927, p. 501.)

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

BLOOD TRANSFUSION INTO THE LONGITUDINAL SINUS*

REPORT OF CASE

LESLIE L. NUNN, M.D.
Eveleth, Minnesota

Blood transfusion in infants has long been regarded as a difficult procedure and to be considered only as a last resort. Consequently when Helmholz in 1915 introduced the method of transfusion into the superior longitudinal sinus he opened up a new field and made it possible to introduce directly into the infant's vein the blood which had heretofore been introduced subcutaneously, intramuscularly or intraperitoneally.

The following case illustrates the feasibility of utilizing the longitudinal sinus of infants provided the anterior fontanelle has not closed:

G. K., female, ten and a half months old, was taken ill March 10, 1927, with bloody stools, weakness and anorexia. The parents soon noticed that the baby was becoming very pale but had noted no marked loss of weight. I was called to see her on March 24, 1927, and found a rather plump baby of normal size for the age but so pale she appeared practically bloodless. Head, neck and thorax were essentially negative. The liver and spleen were easily palpable. Stool examination was positive for blood; hemoglobin was 12 per cent Dare; erythrocytes 1,660,000; small lymphocytes 48 per cent; large lymphocytes 7 per cent; transitionals 2 per cent; polynuclear neutrophiles 43 per cent; there was considerable anisocytosis and poikilocytosis; coagulation time 5 minutes; temperature 99.6 rectal. Her blood belonged to Group III, which was compatible with the father's blood. Diagnosis: Melena with severe secondary anemia.

On March 28, 1927, she was given 60 c.c. of whole blood from the father. The anterior fontanelle had become cartilaginous but was pierced without great difficulty with a 24 gauge Luer needle attached to a 20 c.c. syringe. On entering the sinus a free flow of blood was at once obtained by drawing back on the plunger. Using a modified Lindeman technic, blood was taken from the median basilic vein of the father and introduced slowly into the sinus. There was immediately a perceptible change in the color of the child, the lips and mucous membranes becoming very pink. There was no chill, fever or other reaction following transfusion.

One week later the patient was given 80 c.c. of whole blood into the superior longitudinal sinus by the

*From the More Hospital, Eveleth, Minnesota.

same method without reaction or complication. Four days later her blood picture had improved to such an extent that it was decided unnecessary to repeat the transfusion unless the count began to drop. A blood count was done weekly, the results of which are shown in the accompanying table. The infant's color improved rapidly, and the appetite improved until at the present time she appears as a practically normal child for that age. It was originally planned to give her a transfusion each week but such rapid improvement was noted that only two were necessary.

	Mar. 26	Mar. 28	Apr. 1	Apr. 4	Apr. 12	Apr. 19
Hemoglobin	12%	16%	18%	24%	24%	27%
Erythrocytes	1,660,000	1,710,000	1,780,000	2,566,000	2,870,000	2,930,000
Coagulation time	5 min.					
Color index	.37	.47	.53	.48	.45	.46
Leukocytes	9,000					8,200
Small lymphocytes	48	After		After		59
Large lymphocytes	7	first		second		6
Transitional	2	trans-		trans-		5
Polymorphs	43	fusion		fusion		30
Eosinophiles						

The accompanying table shows the blood picture during the period of treatment and observation of the patient. At all times there was a slight degree of anisocytosis and poikilocytosis and an occasional microcyte and macrocyte.

Technic.—The top of the infant's head is shaved and prepared with benzine, iodine, and alcohol. The arm of the donor is prepared and a tourniquet applied. Three basins of sterile normal saline are at hand to wash out each syringe as it is used. I use three 20 c.c. Luer syringes and No. 24 gauge needles. By wrapping the infant in a sheet or blanket with the arms at the sides and having a nurse or assistant hold the head firmly the danger of missing the sinus is minimized.

The needle attached to an empty syringe is inserted through the anterior fontanelle to the depth of about 1 cm. pointing in the direction of the external occipital protuberance. The needle should, of course, have a short bevel to avoid puncturing the opposite wall of the sinus. When blood appears in the syringe by gently drawing on the plunger, the needle is held firmly, the syringe is removed and handed to the nurse, who washes it out in saline solution. In the meantime the assistant has filled a 20 c.c. syringe from the vein of the donor and passes it to the operator, who slowly injects it into the sinus of the infant. Great care should be taken in injecting the blood; back pressure on the plunger should be tried at frequent intervals to be sure one is still within the sinus. Too rapid injection is likely to cause intracranial pressure which may result fatally. Consequently it is best to inject at the rate of 10 c.c. per minute.

In this manner, from 60 to 100 c.c. of blood may be introduced into the infant's venous system within a few minutes—I believe, more easily and efficiently than by any of the other methods.

Conclusions.—By utilizing the superior longitudinal sinus, the problem of transfusion in infants becomes greatly simplified. Certainly the external jugular is second choice, but lack of coöperation on the part of the patient usually makes this a rather difficult procedure. The introduction of blood into the peritoneal cavity is accompanied by a certain amount of risk and the results obtained by such a procedure are not as satisfactory as introducing the blood directly into the infant's vein. Intramuscular injections must necessarily be relatively small amounts and are unsatisfactory because of the tendency to form hematomata which easily become infected.

The technic is simple, rapid and efficacious. I believe this method is superior to the citrate method because it is (1) more quickly done and (2) the total amount injected is less than in using the citrate method; the introduction of relatively large amounts of fluid into an infant's vein is not particularly desirable when there is no loss of body fluids.

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RETAINED PLACENTA IN A BICORNUATE UTERUS*

Report of Case

ROBERT E. McDONALD, M.D.
Minneapolis

E. C., a primipara aged 19, entered the Minneapolis General Hospital in labor June 18, 1927. Labor had begun with regular pains starting shortly after midnight June 18th and continued throughout the day with very little progress.

Physical examination revealed a well developed woman, apparently normal in every respect. Pelvic measurements were as follows: Interspinous 28.0 cm.; Intercristal 30.5 cm.; Intertrochanteric 34.0 cm.; External Conjugate 21.0 cm. By abdominal and rectal examination the position of the fetus was determined to be O. L. A. During the first twelve hours of labor, pains were very ineffectual and little progress was made. The following five hours, however, brought good progress and the patient was delivered of a normal female infant at 5:25 P. M., seventeen hours after the onset of labor.

Soon after delivery, a slow but steady flow of bright red blood began and was partially controlled by gently massaging the fundus. In doing so, considerable irregularity in the fundus was noted. A central notch or depression could be felt by abdominal palpation and the uppermost transverse diameter of the uterus was greater than in the normal parturient uterus.

After several unsuccessful attempts to express the placenta by Crede's method, which were begun twenty minutes after delivery, it was decided to await spontaneous separation and to control the hemorrhage with pituitrin. One half hour after the baby was born, an ampule of pituitrin was given in an effort to stop the hemorrhage, which was now becoming more active. This lessened the flow of blood for fifteen minutes, when it again began, this time to an alarming degree.

Preparation was made for manual removal of the placenta, which, it seemed probable, had partially separated but remained in the lower uterine segment. Upon introducing the gloved hand into the uterus the placenta was found to be tightly adherent along the right wall and in the apex of the right cornu of a distinctly bicornuate uterus. A midline septum extended downward from the superior aspect of the fundus about one third of the length of the uterine cavity. Separation of the placenta was accomplished without much difficulty. This was done by inserting the fingers between the placenta and the wall of the uterus and gently peeling it away from the lateral wall of the corpus and right cornu. Approximately two liters of blood had been lost but all bleeding stopped following delivery of the placenta. Subsequently the patient was treated for shock and acute anemia.

The puerperium was markedly febrile in type with a temperature range from 98° to 102° daily for four days. From the third day to the tenth, the lochia was foul and profuse, but the temperature gradually dropped to very nearly normal. The patient left the hospital, against advice, on the fourteenth day. Her condition at this time was good and post-partum examination revealed a fairly well involuted uterus in which two distinct horns could be outlined by bimanual examination.

Family history and past history of disease were negative. Menstruation was established at the age of thirteen and occurred regularly every twenty-eight to thirty days, lasting five days, up to September 7, 1926, when she missed her first period and had none thereafter. For the last few years, the patient has been seized with violent lower abdominal cramps, confined principally to the right side, on the day preceding the onset of each menstrual period. The pain radiated to her back and extended down the right thigh. Following the pain, which lasted not more than one to two hours, a sense of numbness came over her and, to use the patient's own words, her "right leg became paralyzed." She would then collapse and have to be carried to bed. After the menstrual flow began, the cramps and general discomfort disappeared and a normal period then ensued.

*From the Obstetrical Service, Minneapolis General Hospital, Minneapolis, Minnesota.

VACCINATION OF THE NEW-BORN AGAINST TUBERCULOSIS WITH BACILLUS CALMETTE GUÉRIN

The history of the vaccination of new-born infants against tuberculosis with Bacillus Calmette Guérin (abbreviated B C G) since July 1, 1924, in France and other countries over a period of two and one-half years to Jan. 1, 1927, has just been reviewed by Professor Calmette with his co-workers Guérin, Nègre and A. Boquet at the Pasteur Institute in Paris. The vaccine is a living tubercle bacillus of bovine origin rendered avirulent for all animals by 230 passages on bovine bile medium. For the preparation of the vaccine, the B C G organism is transferred from the bile medium to a synthetic medium, cultured, and an emulsion of bacilli prepared. Two c.c. of the finished preparation constitutes a dose to be fed to an infant in milk. Three doses are given. A total of 43,283 children have been thus vaccinated. The various papers which are reviewed may be said to represent the culmination of the life work of a revered scientist. They may open a new era in the eradication of tuberculosis and in the knowledge of its epidemiology. For the United States, however, and for all countries it would seem wise to hold in check uncontrolled enthusiasm for its use until those charged with the responsibility of safeguarding the public have carefully proved that the method and the premises are sound. (Jour. A. M. A., July 9, 1927, p. 115.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

CAUSES OF DEATH FOLLOWING OPERATIONS FOR PERFORATED GASTRIC AND DUODENAL ULCERS: Joseph B. Stenbuck (Annals of Surgery, 1927, LXXXV, 713-721). It is the general impression that the important factors in determining the death of patients suffering with perforated gastric and duodenal ulcers, are, first, the length of time which has elapsed between the rupture of the ulcer and operative interference; secondly, the proximity of the time of perforation to the ingestion of food; and, thirdly, the rapidity with which the operation is performed. There are other factors, however, that are just as important.

The records of eighty-eight patients were studied—twenty-seven, or thirty-one per cent, died.

The mortality rate was found to increase almost in direct ratio to the number of hours elapsing between rupture and operation. Not a single patient died when operated upon within six hours after perforation. In some cases, operated upon after the lapse of more than twelve hours, there was little or no spilling of stomach contents and only a localized inflammatory reaction. In this type of cases the patient may recover even though operated upon long hours after perforation.

The majority of surgeons are in favor of the simplest form of operation, which is closure of the ulcer in two or three layers, reserving gastro-enterostomy for those cases with obstruction.

The value of drainage is frequently discussed. It is the impression of the author that after the source of the peritoneal soiling is eliminated and the proper toilet of the abdominal cavity is performed, little help may be expected from drainage devices.

In general small perforations were attended with recovery while large perforations allowed of a higher mortality. The mortality rate increased with the ages of the patients and in the presence of chronic cardio-vascular, kidney, and pulmonary disease.

The deaths were divided into three groups according to time they occurred after operation: Group I—Those patients who died within three days after operation. The preponderant factor is shock, chemical and bacterial in origin. Group II—In the second group the patients die of a generalized purulent peritonitis. They pass through the period of shock very quickly, but after a few days the signs of peritonitis appear and the patients die. Group III is the abscess group. The abscess may be suphrenic or within the liver. In the latter, the symptoms appear at the end of the second or third week, with pain in the abdomen, a rise in temperature and pulse rate, and sometimes a chill. The condition does not respond to surgical treatment and the patient dies in one to two months post-operative. Death from abscess of the liver occurred twice in the series and in a similar number the cause of death was a subphrenic abscess.

HAROLD E. SIMON, M.D.

SOLITARY CYSTS OF THE KIDNEY: Andrew Fullerton (Brit. Jour Surg., 1927, XIV, 629-633). Solitary cysts of the kidney are rare. A total of 99 cases have been reported in the literature, including the author's case.

Solitary serous cysts should be differentiated from solitary hemorrhagic cysts which have a different etiology and structure. The serous type are probably retention cysts, due to constriction of the tubules by sclerosis following chronic inflammatory changes. They arise from the cortical portions of the kidney and very rarely communicate with the calices or pelvis. They are usually unilateral and vary in size from that of a hazel-nut to that of a man's head or larger. The age incidence is usually between 30 and 60 years and the condition is more frequent in females than in males.

Symptoms may be entirely absent or a tumor in the abdomen may be accidently discovered, which, if large may exert pressure on the diaphragm or abdominal contents, giving rise to dyspnoea or gastro-intestinal symptoms. Pain, when present, may be constant or intermittant and may simulate renal colic. The urine may be normal; rarely blood or pus may be found in it.

Pyelography will differentiate between hydronephrosis and cysts. Cysts, according to Braasch and Carman may give rise to (1) shortening of the adjacent calices; (2) flattening of the nearest portion of the true pelvis; and (3) changes in the axis of the kidney. A normal pyelogram will not wholly exclude the presence of a cyst.

Cuneiform resection is the method of choice in a suitable case. Nephrectomy will be required when the cyst is large and involves a large area of the kidney or when other cysts are present.

HAROLD E. SIMON, M.D.

THE UNDESCENDED TESTIS: Owen H. Wangensteen (Archives of Surgery, March 1927, 663-731). Undescended testes in the human adult are practically always aspermatic. Fixation of the testis to the lowest portion of the scrotum, preferably between the ages of 9 and 11 years, will enable it to develop normally. Only rarely will transplant after the age of 16 be of any benefit. If descent is incomplete at the end of the first year of life, it seldom occurs. The probable explanation for the necessity of scrotal location for a normal testis is the scrotum's temperature.

Mobilization of the testis sufficient for orchidopexy can be obtained by the separation of the testis from the vaginal process, freeing of vessels and vas deferens into the abdominal cavity, and the separation of the fascial coverings of the cord. Suture of the testis to the bottom of the scrotum is necessary, and a suture could be run through the bottom of the scrotum and tension by mechanical fixation used to maintan the physiologic position, because even though stripped of the cremaster and its fascial coverings the testis tends to retract.

Other surgical procedures possible are removal of the testis and abdominal reposition.

Ligation of the vas deferens does not result in atrophy of the germinal cells nor in hypertrophy of the interstitium. Section of the internal spermatic artery is followed always by diminution in size of the dog's testis and by scattered degenerative changes in the tubules; spermatogenesis still contains. Legation of the internal spermatic artery and all veins in the pampiniform plexus results in total destruction of the testis. Theories of rejuvenation based on ligation of the vas, or homo, or hetero transplant of the testis are not rational.

The above conclusion are based upon microscopical study of the normal and undescended human testis, and testes of dogs following experimental operative procedures.

Complications of undescended testes may be—

1. Pain. A painful inguinal testis that cannot be gotten into the scrotum without vessel section may as well be removed, for it frequently continues to be painful after abdominal reposition.

2. Torsion, with strangulation. This may also occur if the testis is placed in the peritoneal cavity.

3. Hernia, which accompanies 57 per cent to 100 per cent, according to different statistics.

4. Malignancy, which is more likely in the nondescended testis. Scrotal fixation does not lessen its occurrence, but it is not of sufficient frequency to warrant removal of the testis.

Castration is rarely indicated in the uncomplicated undescended testis.

J. H. Bowles, M.D.

SARCOMA OF THE RECTUM: J. H. Weeks (Surg., Gynec. and Obstct., 1927, 44, 478-482). Excluding the melanotic type, rectal sarcoma appears to be exceedingly rare. A review of the literature reveals 100 cases. The melanotic type is twice as frequent as are the other varieties.

The author reports one case. Sarcomata, as highly vascular, malignant neoplasms arising in connective tissue, may originate in the subserous, muscular or submucous groups of the rectum. They originate as small nodular masses which later ulcerate. The diagnosis is seldom made, and it is generally mistaken for carcinoma. They are usually situated low down in the rectum, just above the anal opening. They develop rapidly, show a tendency to pedunculate and to obstruct the rectal lumen, but may not ulcerate until late. They may be confused with hemorrhoids, leutic strictures and tuberculous lesions.

The diagnosis between carcinoma and sarcoma is of more academic interest as the treatment in either lesion would be the same, viz., early radical removal.

Harold E. Simon, M.D.

LA CHIRURGIE DE LA DOULEUR (THE SURGERY OF PAIN): R. Leriche (La Presse Medicale, 1927. 32, 497-499). There exists today a surgery of pain. Its object is to relieve the patient who suffers from one of those syndromes, consisting of pain but unknown in origin; or to relieve the pain of an incurable disease such as tabes or cancer. It is true that there are drugs to relieve such patients, but their dosage must be increased constantly and the patient is never secure from the tyranny of his pain.

The surgery of pain is simple in a patient with a known disease which in itself is an indicaton for operation, for example, it is easy to relieve the pain of a peristalsis from obstruction, the headache of an intracranial pressure, or the tension of an inflammatory condition. When there is no organic lesion, however, the problem is a difficult one.

The anatomic mechanism of pain is a complex one. Its origin may be central or peripheral, its location may be deceiving, its manifestations are varied. Errors in diagnosis are to be guarded against in order not to confuse the treatment of pain of organic origin with the pain not having a recognizable organic basis. One is never justified in operating at random.

Another difficulty arises from the existence of two types of pain, from the physiological standpoint. These are the cerebro-spinal and sympathetic types. The first is constant in location, and is intermittent; of this type, trigeminal neuralgia is the most typical example. Sympathetic pain is less constant in location, it is diffuse, is constantly referred to new areas and is affected by the emotions, et cetera.

The essentials of surgical procedures for the relief of pain are that they neither endanger life nor cripple the patient. One should be conservative in removing ganglia indiscriminately. The author seldom cuts the posterior roots for pain because of the hypertonic condition and the edema which results. He also does not approve cordotomy. Section of the fibers is often not complete, there is residual pain, and it is not rare to have disturbances in sphincter control and some

pyramidal tract symptoms. He believes it should be reserved for cancer patients. Sympathectomies must be performed by skilled operators to avoid injury to adjacent structures.

The choice of patients is difficult. If one waits too long he has to deal only with morphine addicts and incurables. Repeated operations are to be avoided. After such an operation it is essential that the patient be encouraged regarding his prognosis.

HAROLD E. SIMON, M.D.

A CASE OF ALBERS-SCHONBERG'S DISEASE: H. R. Sear (Brit. Jour. Surg., 1927, XIV, 657-660. Albers-Schonberg's disease is an extremely rare condition. The typical features of the disease are the extremely dense changes in all the bones, especially the ends of the diaphyses; with marked anemia, due probably to the diminution of the medullary spaces; enlargement of the spleen and liver; pressure on the cranial nerves, with optic atrophy, nystagmus, et cetera; hydrocephalus; interference with dentition; and necrosis of the jaws. A case is reported which presented all the classical features.

The radiographic features of this disease are the generalized nature of the bony lesion, all bones without exception are involved, especially the ends of the diaphyses which assume an extremely dense structure, hence the name, "marble bones."

HAROLD E. SIMON, M.D.

ENTEROVESICAL FISTULA: F. Gordon Craig and R. K. Lee-Brown (Surg, Gyn. and Obst., 1927 44, 753-755). This condition is comparatively rare. The communication is usually between the terminal portion of the large intestine and the base or posterior vesical wall. It occurs three times as frequently in females as in males.

It may be traumatic or non-traumatic in origin. The traumatic variety may result from a wound or accident, or from surgical procedures. The non-traumatic variety may arise from inflammatory processes secondary to diverticulæ, stones, strictures, ulcer, or neoplasm.

The symptoms consist of the passing of gas and feces per urethra, and urine per rectum. There is generally some cystitis. Cystoscopy and cystography furnish valuable information in some cases. The prognosis depends upon the cause.

The treatment is surgical. The essential step is the obliteration of the tract and for this purpose abdominal section in most cases offers the best approach. The bladder and intestine are separated and the openings in each are closed. Colostomy and cystomy may be used as palliative measures.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

CELIAC DISEASE—A SUMMARY OF PRESENT CONCEPTIONS: Sandor A. Levinsohn, M.D. (Arch. of Ped., June, 1927). The dietary during infancy appears to have no bearing on the later development of celiac disease. Hunger, relative or absolute, brought about through the parents or the physician, and too frequently repeated, or thorough anorexia, appears to be far more important.

A very vivid diescription is given by Lehndorff and Mautner: pale face with a peculiar expression which is a mixture of irritability, distrust and fatigue, thin legs and prominent abdomen. The face is never as thin and emaciated as the extremities.

Distended abdomen is present in all cases. Paleness and anemia is a constant early sign. Osteoporosis is common, caused perhaps by a negative calcium balance or a B. avitaminosis. Fatigue is a cardinal symptom and may be extreme. The stool is the most characteristic feature. It is soft, unformed, but not watery, more in quantity than can often be accounted for by the food intake. It has an intensely foul odor as though the food had been entirely putrefied rather than digested. The light color may be due to lack of bilirubin, abundance of fat, or the reduction of bilirubin to urobilin.

Water, fat, carbohydrate, protein and salts are very poorly resorbed through the intestinal tract. Calcium, organic acids, and perhaps other products are either excreted into the intestines in larger amounts than normal, or are poorly resorbed.

Inability of the cells to normally take up water may explain many celiac symptoms, as growth itself is dependent upon this property. The constant thirst and tendency to edema is also significant of disturbed water balance. Growth appears to be disproportional, the inhibition affecting more the long bones than the head. The most frequent complication is tetany.

In principle, the dietary should have the fat reduced as much as possible, milk omitted or served as protein milk, protein fed in various forms and with as many changes as possible, carbohydrate offered in the most unfermentable forms, and roughage or cellulose-bearing foods ommitted. Bananas are an exception, as recommended by Sydney Haas. Fruits and vegetables, except as powders or extracts, should not be permitted.

R. N. ANDREWS, M.D.

A REVERSAL OF THE NORMAL CONCENTRATION OF THE URINE IN CHILDREN HAVING ENURESIS. Aaron Friedell, M.D. (Amer. Jour. of Diseases of Children, May, 1927). The observations were made on thirty-nine patients at the university dispensary. Cases in which the urine was abnormal were not included in this series. The entire group was subjected to the same regimen of treatment, which included restricting the fluid intake after 4 p. m., abstaining from tea, coffee, and highly seasoned food and retiring to bed at 7:30 p. m. on a hard mattress. In addition, each child was given a hypodermic injection of 1 c.c. of sterile water once a week and was assured that this treatment would result in a cure. They were warned, however, that should a relapse occur, additional injections would be administered.

Twenty-nine of the children included in this series were relieved of their condition without a relapse over a period of six months following from one to three injections of 1 c.c. each of sterile water. These prompt and permanent cures, however, occurred in children who had a greater concentration of urine at night than during the day.

The occurrence of a reversal of the concentration of the urine in certain patients having enuresis to date has escaped attention. The existence of this condition possibly is an important etiologic factor, especially in patients failing to respond to psychic therapy.

In patients whose urine showed a persistent reversal of concentration, when the specific gravity of the day specimen was greater than the night, the treatment proved a failure.

R. N. Andrews, M.D.

DIATHERMY IN THE TREATMENT OF PNEUMONIA: R. P. Forbes, M.D. (Arch. of Pediatrics, June, 1927). The loosening of the secretions and the restful sleep following treatments must be of definite value in permitting the favorable termination of the pneumonia. Many infants go to sleep during a diathermy treatment and perspire freely for some time after treatment. A fall in temperature is sometimes noted and the pulse is usually slower and of better quality.

Careful use of diathermy if thymus hypertrophy is suspected is advised.

A study of all of the case records of pneumonia in the hospital for two years preceding the use of diathermy compared to the past year in which most of the cases of pneumonia have received diathermy treatment, shows that the mortality of both lobar and bronchopneumonia has been reduced about one-half in those cases receiving diathermy treatment.

Duration of the disease is apparently unaffected by diathermy. Complications were strikingly reduced in the past year's series in both lobar and bronchopneumonia treated by diathermy. Except for the use of diathermy, usually twice daily, the same routine measures have prevailed in the treatment of pneumonia.

R. N. Andrews, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:
VIRGIL J. SCHWARTZ,
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AN OPHTHALMIC RADIATION LAMP: Duke-Elder (Brit. Jour. Ophth., February, 1927). Diseases of the outer coat of the eye, with its adnexa, have been treated with good results by means of the ultra-violet lamp. These diseases include blepharitis, chronic conjunctivitis, corneal ulcers of various types, including recurrent hypopyon and the stubborn marginal ulcers; good effects have also been produced on recent corneal opacities, phlyctenular or eczematous keratitis, tuberculous keratitis, episcleritis and iritis with nodules on the anterior surface of the iris. Except for the last mentioned condition, this form of therapy must not be used for treatment of an intraocular disease because the action of the radiant energy of various wavelengths, especially the heat rays, upon the lens may start up a cataract, particularly if the lens in question happens to be predisposed to such alteration. The attempt to cure a beginning or partly developed cataract by this method is wholly unjustified, and is more apt to hasten than to prevent or delay the maturation of the cataract. Ultra-violet therapy, unfortunately, has come to be regarded by much of the laity as a panacea for all ills, and this view must be combated.

Virgil J. Schwartz, M.D.

THE SEX-INCIDENCE OF SOME DISEASES IN THE UPPER AIR AND FOOD PASSAGES: Sir St. Clair Thomson (Practitioner, February, 1927). Since Aristotle and Catullus there has been recognized a close association between the nose and throat and the sex organs. Voice changes accompanying development and involution of the genitalia, have long been well known. The boy's voice normally "cracks" at puberty; if castrated, the eunuchoid voice persists. Late in male life, the sex apparatus having lost its function long before the organs which simply maintain life, the voice again becomes a piping childish treble. The female voice undergoes no marked change until the menopause, when it is apt to lose its charm and vigor; occasionally, also, sensory throat neuroses occur at this time.

The Nose.—At puberty, boys are more subject to spontaneous epistaxis than girls. "Vicarious menstruation" is extremely rare. Deformities of the nasal septum are far more frequent in males because of the greater incidence of nasal trauma among them. Ozena is more frequent in females and is accentuated at the menstrual periods.

Naso-Pharynx and Pharynx.—Tonsil and adenoid affections and tuberculosis in this region are about

equally divided between the sexes. Tertiary syphilis is more common in males, probably because of tobacco irritation.

The Larynx.—All affections of the larynx, both acute and chronic, are more common in males than in females. No good reason has been advanced for this; alcohol and tobacco would not explain the inequality during childhood. However, the greater sex-activity of the male and its influence upon the larynx may account for some of the disproportion.

Tuberculosis.—Formerly, it was thought that males were more predisposed to laryngeal phthisis than females. This is not true. More males than females have been found thus afflicted simply because of the greater exposure, direct and indirect, of the former. As woman leaves her comparatively sheltered life and enters the same occupations and circumstances as man, the incidence of laryngeal tuberculosis will be found the same in the two sexes.

Cancer.—Malignant growths of the tongue, fauces, soft palate, tonsils and larynx are common in males and very rare in females. However, in the hypopharynx (the post-cricoid area), cancer is much more frequently found in women than in men; from this point downward in the esophagus, the incidence in women becomes smaller and that in men greater. None of these facts can be adequately explained.

Functional aphasia, aphonia, and dysphagia used to be found much more frequently in women than in men, but since the war the incidence of the first two affections has become greater among men.

Virgil J. Schwartz, M.D.

METASTATIC CARCINOMA OF THE CHOROID: Thomas and Sladden (Lancet, March 12, 1927). A very unusual case of bilateral metastatic carcinoma of the choroid came under observation. A male, congenital deaf-mute aged 39, complained of total blindness in the left eye for the past few weeks. On examination the only pathology found was a swollen left optic nerve-head. The right eye was normal.

A month later the left disc was white and atrophic; below and temporally was a large, flat detachment, while nasally was a smaller detachment. These gradually spread over the entire fundus, and transillumination began to disclose a solid mass beneath the retina. Refusing enucleation he returned after several weeks, complaining of the right eye; there was found in this eye, then, a small, flat detachment above and nasally. About a month later he was sent back blind and emaciated, with hemoptysis, tenderness over the liver, and signs of a chest tumor. Some two months later he returned, complaining of severe pain in his now glaucomatous left eye. The retina of the right eye was also detached, but glaucoma had not yet supervened. The left eye was removed and a diagnosis of carcinoma made. Five weeks later the patient died, and a post-mortem examination showed an early basal leptomeningitis and large mediastinal tumors extending into both lungs, with metastases in the lungs, liver and aortic glands. The sclera and choroid of the right eye from optic nerve to limbus on the nasal side, were invaded by a tumor mass averaging four mm. thick, apparently of the same type of bronchial cells as the growths in the mediastinum and left eyeball, only of a more vigorous, rapid growth.

Carcinoma of the choroid is almost always flat, and does not often cause glaucoma. One third of reported cases have been bilateral; otherwise, the left eye is involved more often than the right, probably by way of the lymph channels. The lung is one of the most frequent primary foci of choroidal carcinoma.

The left eye, previously enucleated, presented a solid tumor which enclosed the optic nerve behind the eyeball, reaching a diameter of about two centimeters. The choroid was completely and symmetrically invaded throughout its posterior portion. It was noted that the growth became increasingly malignant as it spread from the lungs to the left eye, thence to the right.

The age incidence of metastatic carcinoma of bronchial origin may be rather low: the case here discussed was 39 years of age, while others as young as 27 have been reported.

Virgil J. Schwartz, M.D.

PLASMOCHIN

The Council on Pharmacy and Chemistry issues a preliminary report on "Plasmochin," a synthetic quinoline derivative, developed in Germany and proposed for use in the treatment of malaria. For many years attempts have been made to find a substitute for quinine that would be cheaper, less bitter, less toxic and more specific than quinine. Plasmochin appears to be a step forward in this search, though it is not a full solution of the problem of eradicating malaria. It is said to act by destroying some of the forms of the malarial parasite and by inhibiting the development of others. Those who have studied the drug appear to agree that the new drug is most effective on the quartian forms of malarial parasite, that in tertian malaria a combination of the new drug with quinine is more effective, and that in birds the drug is sixty times more effective than quinine. The Council points out that results derived from the study of bird malaria have chiefly a suggestive value, and that further clinical study must be made before any optimistic estimate of its value in human beings can be formed. The Winthrop Chemical Co. has imported the drug for clinical trial and this is labelled to be "ethylaminoquinoline tannate." The firm states that the product when placed on the market in this country will be manufactured here. The Council has postponed further consideration of Plasmochin until clinical evidence concerning the efficacy, safety, and dosage of the product is available. (Jour. A. M. A., July 9, 1927, p. 113.)

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

POTASSIUM AND TARTRATES. A review of the literature on their physiological effects. Ralph W. Webster, Ph.D., M.D. Digest and bibliography of the literature by W. A. Brennan, A.B. 168 pages. Cloth, $2.50. Chicago: The Commonwealth Press, 1927.

THE NEW MEDICAL FOLLIES. Morris Fishbein, M.D. 235 pages. Cloth, $2.50. New York: Boni and Liveright, 1927.

MANUAL OF THE DISEASES OF THE EYE. For students and general practitioners. Charles H. May, M.D. 12th edition, revised. Illus. 445 pages. Cloth, $4.00. New York: William Wood and Company, 1927.

HISTORY OF MEDICAL PRACTICE IN THE STATE OF ILLINOIS. Committee on Medical History, Illinois State Medical Association, Charles I. Whalen, M.D., Chairman. 2 vols, $10.00. 714 pages. Illus. Chicago: Illinois State Medical Society, Medical and Dental Arts Bldg., 185 North Wabash Avenue, 1927.

Doctors who lived formerly in Illinois, or who are descendants of pioneer physicians of the "Illinois country," will hear with interest that Volume One of the "History of Medical Practice in the State of Illinois" is ready for delivery.

The history has been written under the supervision of a committee appointed by the Illinois State Medical Society as a commemoration of its seventy-fifth anniversary but more especially to make a living tribute to those valiant men of the medical profession who played so able a part in the exploration, settlement and development of the Illinois country.

In this first volume of the history are set down events from the earliest available knowledge of conditions in the Illinois country, along through the days of the Aborigines, up until the year 1850.

In the second volume (now in preparation), narration continues up until the present time. Future years will bring other volumes so that this history will be an ever virile monument to the men and incidents it would honor.

Research of years resulted in an opulent supply of material from which to compile this history and has evidenced to an almost unbelievable degree the vital part played by physicians in every angle of the exploration, settlement and development of a country that is one of the richest and most influential sections of the richest country in the world.

It must be remembered that originally the Illinois country encompassed a territory far greater than the area now known as the state of Illinois. Wisconsin, Indiana, Missouri, Kentucky and Iowa, as well as what is now Illinois, and even some sections of Ohio, fell into that primitive epitome of the Illinois country. In the southern part of the state it was well into the Nineteenth Century before Missouri and Illinois ever acknowledged the natural divorce of interests made by the Mississippi river. Because of this, naturally enough, close interest in this history extends to physicians or to their descendants in practically every state in the Mississippi Valley or contiguous thereto.

Rare maps, unusual personal memorabilia and rare discretion in compilation make this history of unique interest to doctors everywhere and to many laymen.

This history of medical practice in the state of Illinois embodies, in the course of its narration, an interesting and illustrated digest of the early efforts of white settlers in Illinois, with specific allusion to the share in these tasks performed by medical men. Included are portraits of rare interest, reproductions of historic documents, excerpts from diaries, personal letters, human reminiscences of days fraught with peril, filled with hope, and not devoid of humor, through a period of about 250 years. From the days of the "Chirugeon" who attended Pere Marquette, through the massacres at Fort Dearborn, the years of Indian raids, down with the circuit-riding "saddle-bag" doctors, to these days of radium and radio, this history marches. Attics, family albums, safe deposit vaults, and state records have been ransacked to produce the material needed for this chronicle. Illinois holds today the honor of being the world's medical center. Progressive steps of this achievement, and its contributive factors such as hospitals, asylums, sanitariums and allied institutions and medical colleges are set forth in detail, both pictorial, documentary and narrative. In brief, this account epitomizes the almost unequalled growth of a community whose economic wealth is paralleled by its public health. Personal data of the men, of the organizations—including pioneer army and navy physicians and surgeons and local, county and district societies, schools and hospitals as well as of the Illinois State Medical Society itself; various internationally famous medical discoveries made by Illinois men; the state's contribution to the world of research; medical libraries and periodicals existent in Illinois; campaigns for medical protection against enemies of public health; details of the various Medical Practice Acts; state sanitation from the notable drainage canal to the supervision of food supplies; vital statistics; meetings, officers, policies and finances of the State Society—all these and more, in accurate transcription, make this history a miniature encyclopedia of scientific advance and desirable and hitherto unavailable information.

The edition is limited. It will not be reprinted. A place in every physician's library is merited by this volume, both as a tribute to the men who blazed the trail for modern scientific medicine and as an ever-present reminder and authority as to what is happening to medicine right in this state every day, so far as finance, discovery, legislation and public relations are concerned, and the men who are responsible for the heritage of trust for over two centuries and a half. Volume One is now ready. Volume Two will follow soon.

MANUAL OF GYNECOLOGY. John Osborn Polak, M.Sc., M.D., F.A.C.S. 3rd edition, revised. 402 pages. Illus. Cloth, $5.00. Philadelphia: Lea and Febiger, 1927.

If one desires a book giving essential facts in gynecology, this is the one to possess. The non-encyclopedic nature of the book makes it valuable to the student as a text book and the practitioner as a ready reference. You will find a paucity of statistics and theoretical discussion. Operative procedures are selected according to the author's opinion as to their merit. Pathology and diagnosis are stressed; symptomatology is concise with italics for the important points; treatment takes a minor position but is sufficient.

J. H. Simons, M.D.

CLINICAL PEDIATRICS. John Lovett Morse, A.M., M.D. 848 pages. Illus. Cloth, $9.00. Philadelphia and London: W. B. Saunders Company, 1926.

This reference book is the product of many years of careful and extensive observations. Dr. Morse covers the field of Pediatrics thoroughly and extensively, giving freely of his great experience. The text is concise, well written and at the same time easily read. There are many excellent illustrations throughout. This book will find a useful place in the library of any physician who treats the child.

L. R. Critchfield, M.D.

THIS BUSINESS OF OPERATIONS. James Radley. 96 pages. $1.00. Cincinnati: The Digest Publishing Co., 1927.

This attractive little volume has a foreword by J. M. Withrow, M.D., Chief of Staff at Christ Hospital, Cincinnati. The book itself represents an apology from a business man to the medical profession for his former lack of appreciation. Having always been a healthy man he had no knowledge of hospitals and classed them with jails as necessary evils in the community. He ignored certain disturbing, prodromal symptoms of ill health until he was suddenly taken ill and rushed to a hospital for an operation. Here he found comfort, "cheer without laughter," efficiency and even beauty. He was greatly impressed by the dignity, reserve and unselfishness of the doctors and the absence of publicity in the entire organization, and he even compared his special nurse to his flapper secretary, to the great discredit of the latter.

At times the details of his mental processes before, as well as after, his hospital experience become somewhat wearisome and the reader may feel that the material put forth is inadequate for a book. But to apprehensive persons about to undergo similar ordeals it may bring comfort and assurance, therefore may prove to be a valuable book to recommend to patients.

Margaret Warwick, M.D.

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HAY FEVER IN MONTANA*

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THE RECORDS of the American Hay Fever Association indicate that the victims of hay fever in the United States number over a million and that the number is steadily increasing both apparently and actually. The apparent increase is due to the fact that many cases of hay fever are now recognized as hay fever instead of common colds. A conservative estimate is that one per cent of the population of the United States have hay fever. About sixty-five per cent of these finally become asthmatic if not treated. Hay fever frequently occurs in those who have a history of urticaria or eczema in childhood.

Hay fever was first described as an entity in 1673. The causes were attributed to various factors, such as sunlight, heat, ozone and emanations from hay, flowers and decaying vegetable matter. In 1865 Blakely obtained cutaneous pollen tests on his own arm. In 1870, Wyman sent ambrosia in full bloom to a resort in the White Mountains. The weed was sniffed by eight patients; one developed asthma, six developed hay fever and one remained unaffected. Eight others who did not come in contact with the package remained symptom-free.

In 1902 Dunbar produced hay fever by instilling a pollen extract into the conjunctival sacs of susceptible individuals. From then on advances were made rapidly.

Although hay fever is not fatal it is very distressing and depressing, often dreaded more than the more serious diseases. Patients look forward to the prolonged irritation, nasal congestion and restless nights. It interferes materially with the patient's ability to carry on his occupation.

SYMPTOMS OF HAY FEVER

Hay fever usually begins about the same date each year, the time corresponding to the pollinating time of the causative pollen. It usually occurs in otherwise healthy individuals. The onset is usually sudden with a sense of fullness across the bridge of the nose and irritation in the upper chambers. The inner corner of the eye itches and burns, there is tingling and itching at the roof of the mouth with spasmodic sneezing and pain in the eyeballs. There is considerable lacrymation and serous discharge from the nose. The nasal mucosa swells so that respiration through the nasal passages becomes impossible. Discharges from the eyes and nose later become semi-purulent. Vision becomes blurred and painful. The face becomes puffy and edematous, and the sense of smell is almost lost. Rest at night is frequently broken due to the swollen mucous membranes of the pharynx and trachea, which makes the patient feel as if he were being suffocated. Cough is frequent and late in the season this often goes on into asthmatic paroxysms. In addition the patient has a general depression, feeling of general malaise and loss of appetite. Dull pains are common, especially a tight band across the forehead.

CAUSES OF HAY FEVER

Ninety-five per cent of all hay fever is caused by wind-borne pollinated plants which grow in the locality in which the sufferer lives. The other five per cent by foods and other proteins which they eat or inhale, such as flour, dust, face powder, dandruff, feathers, etc.

Qualities of hay fever plants are such that they produce large amounts of small pollen which is carried by the wind, sometimes for a distance of ten to twelve miles. This is true of such plants as the russian thistle, sagebrushes, grasses, and poverty weeds which are common causes of hay fever. Such plants as the golden-

*Read before the Montana State Medical Association at the annual meeting, Missoula, Montana, July 13, 1927.

Fig. 1. Crested Koeleria (Koeleria Cristata). Pollinates in June. Shaded portion on map shows geographical distribution.

rod, roses, daisy, sunflower, clover, alfalfa, corn and primrose seldom cause much hay fever as their pollen is less in amount, is too heavy to be carried for any distance in the air, and they usually depend upon insects for carrying their pollen.

Factors which influence the amount of hay fever pollen produced are, first, a damp, cool spring, which increases plant growth; secondly, dry weather during the pollinating season, which allows the pollen to be liberated; and, third, moderate or high winds which carry the pollens.

ATYPICAL FORMS OF SENSITIZATION

There is a relatively small percentage of asthma and hay fever cases, usually of the perennial form, due to the inhalation of the dandruff protein of horses and other animals. During the world war, a number of men in the cavalry and artillery developed hay fever or asthma from inhaling the dandruff of horses. Hay fever and asthma are sometimes due to the dust of feathers. In such a case it is advisable to have the patient use pillows made of floss or kopak

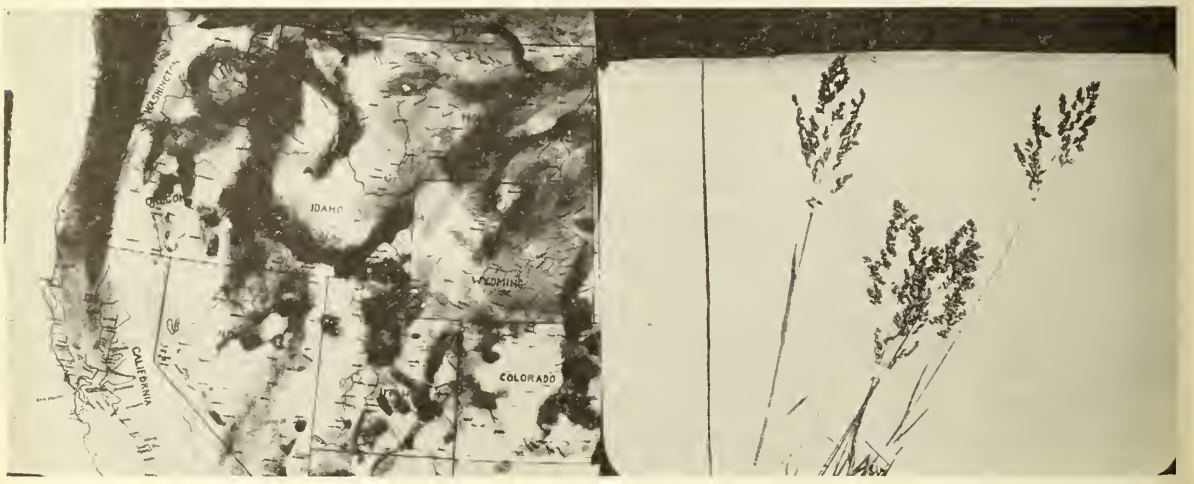

Fig. 2. Kentucky Blue Grass (Poa Pratensis). Pollinates from May to September. Shaded portion on map shows geographical distribution.

Fig. 3. Canada Blue Grass (Poa Compressa). Pollinates May to September. Shaded portion on map shows geographical distribution.

instead of feathers. Wool dust is another frequent offender. The influence of these proteins should be determined by diagnostic cutaneous tests. There are cases also in which the attacks are caused by the dust of coffee, flour and other foods. In perennial cases the cutaneous food tests should always be made with a view to determining any article in the diet which may be a causative agent. If an allergic food is found it should be left out of the diet. Some cases are found which are due to face powders containing orris root. These cases recover when the causative agent is removed.

There are a few cases of so-called vasomotor rhinitis. These cases have frequent nasal colds with paroxysms of sneezing. They do not react to pollen or food protein cutaneous tests. Excitement, worry or fear increases their symptoms. It has been found that the calcium content of the blood is low in such cases, and that if they are treated with calcium their symptoms are frequently overcome. In these cases a care-

Fig. 4. Orchard Grass (Dactylis Glomerata). Pollinates in June and July. Shaded portion on map shows geographical distribution.

Fig. 5. English Plantain (Plantago Lanceolata). Pollinates June to September. Shaded portion on map shows geographical distribution.

ful history should be taken to ascertain whether or not there is any seasonal aspect to this condition. If there is, we must always attempt to find definite causes for these patients who are definitely allergic yet are skin refractory. Dr. F. E. Stier, of Spokane, tells me he is doing an ophthalmic test which is clearing up many of these refractory cases.

In western Montana there are three hay fever seasons:

1. March and April or early spring, when the symptoms are due to the pollens from trees.
2. May and June or late spring, when the symptoms are due to pollens of the grasses.
3. July to frost or fall hay fever, when the symptoms are due to weeds such as the Russian

Fig. 6. Russian Thistle (Salsola Kali-tragus). Pollinates June to September. Shaded portion on map shows geographical distribution.

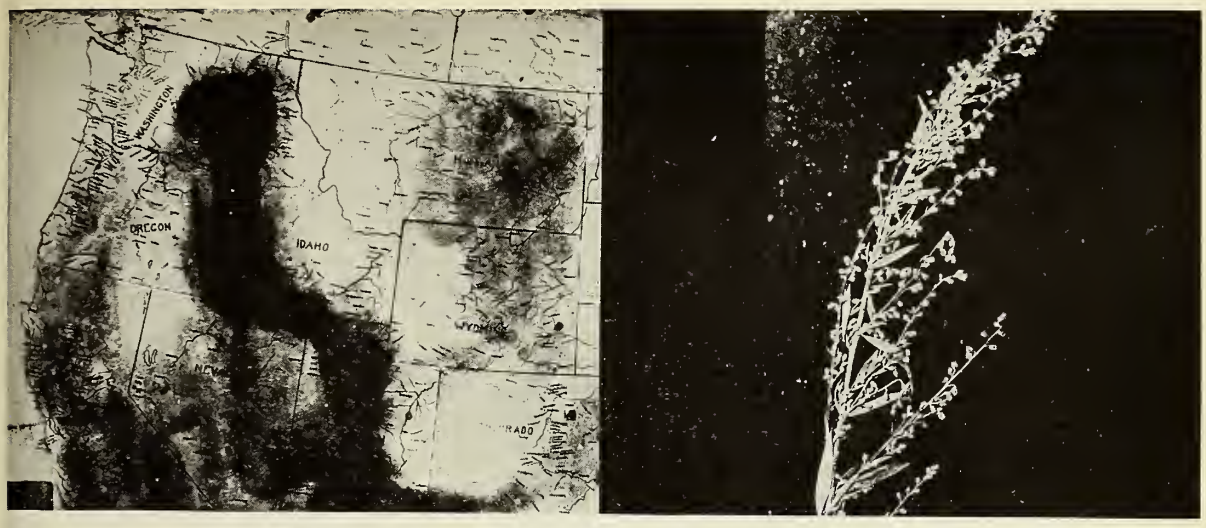

Fig. 7. Sagebrush (Artemisia Tripartita). Pollinates July to October. Shaded portion on map shows geographical distribution.

thistle, sagebrushes and poverty weeds, which are the chief offenders. This group is responsible for over sixty per cent of all hay fever in Montana.

DIAGNOSIS

In order to make an accurate working diagnosis of the causative agent in hay fever a survey of all the wind-pollinated plants in the region is necessary. The pollen extract which is used for the cutaneous test is made by extracting the pollen in a glycerine and salt solution. A scarifier is used to make an abrasion on the forearm, care being taken so that no blood be obtained. On this abrasion is placed a drop of the extract to be tested. Fifty or sixty of these tests can be applied at one sitting. In twenty to thirty minutes if the patient is sensitive to the pollen there will be an urticarial wheal from one to six centimeters in diameter, surrounded by a red inflammatory area. If the patient is not sensitive no wheal or red area will appear. In this way all the pollens are tested simultaneously and in thirty minutes the positive reactions are noted as the causative factors of hay fever.

TREATMENT

A pollen extract made in a glycerine and salt solution is prepared for each individual patient,

Fig. 8. Small Poverty Weed (Iva Axillaris). Pollinates during July and August. Shaded portion on map shows geographical distribution.

Fig. 9. Giant Poverty Weed (Iva Xanthifolia). Pollinates during August and September. Shaded portion on map shows geographical distribution.

those pollens to which the patient is sensitive are included and this preparation is used for the treatment. Ordinarily the first dose contains one pollen unit which represents one millionth of a gram of pollen. The doses are gradually increased until a thousand or more units can be given in a single dose by hypodermic administration. This usually requires about twenty doses to reach the final protecting dose. At first small doses can be given daily for ten or twelve times but after this the interval between doses can be extended to two or three days. The treatment period is planned so that the course of treatment, consisting of twenty or more doses, is completed about the time the weed to which the patient is sensitive starts to pollinate. It is also advisable to continue the treatment during the pollinating season with bi-weekly doses of the final protective dose. Each case, however, is an individual and requires constant supervision and checking. Dosages outlined for one patient may be insufficient or too much for another.

Preseasonal treatment is the method of choice whenever possible, but seasonal desensitization

Fig. 10. Eastern Ragweed (Ambrosia Artemisiæfolia). Pollinates during August and September. Shaded portion on map shows geographical distribution.

should be attempted in those cases that seek relief after symptoms have developed, as a good percentage are given partial relief if not complete.

The treatment sets should be made by someone within a reasonable distance of the locality, who has made a thorough botanical survey of the vicinity and is well acquainted with the plant life in the locality. Treatment sets should be made for each individual patient according to his needs, including those pollens to which he is sensitive and exposed, but omitting others. Stock serums are to be condemned as not being scientific, and are to be classed with shotgun prescriptions.

Care should be exercised in the injections that the needle does not penetrate a subcutaneous vein, as the sudden entry of a considerable amount of foreign protein into the blood stream may produce an anaphylactic shock in a patient sensitive to the protein. Active massage of the injected protein should also be avoided as experimental injection of foreign proteins in animals have shown that the solution may be forced from the site of injection through the lympathics in sufficient amounts to produce serious anaphylactic disturbances.

RESULTS

Treatment was furnished 184 patients during the years 1923, 1924, 1925 and 1926. A questionnaire was mailed to each patient at the close of each season asking him to give his own estimate as to the percentage of relief obtained. Of these the total number to answer such a questionnaire was 133, upon which this report is based.

The following is a summary of the frequency of the onset in this series of cases:

March	4 cases	2%
April	12 "	7%
May	27 "	15%
June	40 "	22%
July	97 "	52%
August	4 "	2%
Total	184 cases	

It can be seen that over one-half of the hay fever cases develop symptoms during the month of July.

Grouping the cases according to the seasons and the amount of relief obtained they were found to be as follows:

Early Spring, relief	13 cases	100%
Late Spring, satisfactory results	43 cases	91%
Fall, satisfactory results	77 "	89%

A consideration of all cases treated without regard to the time that symptoms commenced is as follows:

Complete relief	14 cases	10%
Practically free from hay fever	51 "	36%
75 per cent relief	34 "	25%
50 per cent relief	22 "	19%
25 per cent relief	0	0
No relief	12 "	10%
Total satisfactory results		90%
Total unsatisfactory results		10%

It is difficult to say how much permanent results can be obtained as the immunization lasts for a period of only four to six weeks. However, results over a period of several years show that there is more improvement from year to year when the patient is treated, and a few have even improved to the extent that subsequent immunization was unnecessary. Subsequently, however, it is safe to assume that a patient who receives relief from hay fever this year will have the symptoms again next year if not treated. However if results are good this year, symptoms will not be so severe next year as they were previously when he had no treatment at all.

In order to insure good results, both the patient and the Doctor must coöperate by having a complete diagnosis with potent pollen extracts of all pollens to which the patient is exposed. A correct interpretation of the cutaneous tests and preseasonal treatment at regular intervals with proper dosage of potent extract is necessary. The treatment sets should include one pollen in each important pollen group to which the patient is sensitive. Cases due to orris root, feathers, animal emanations and other causes must be ruled out by the history or by cutaneous tests.

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The author wishes to thank Dr. R. F. E. Stier and Dr. Guy Hollister of Spokane, Washington, for their many valuable suggestions and for the maps used in this paper.

THE PRACTICABILITY OF IMMNUNIZATION WITH COMBINED SOAP TOXIN*

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THE BEST treatment of any disease is its prevention. The use of vaccination in the prevention of smallpox has resulted in smallpox no longer being a constant menace. Vaccination against typhoid fever in the United States army has reduced the incidence of typhoid fever to a minimum. The work of Schick and the work of Parke and his co-workers during the past ten years has made it possible with a universal immunizing campaign by the use of toxin-antitoxin to control the incidence of diphtheria in the same way. For the past three years an effort has been made to vaccinate against scarlet fever using the toxin brought out by the Dicks in 1924. While it is impossible at the present time to say that all cases when vaccinated are protected against scarlet fever, the results so far obtained are so favorable that, until some other method of immunizing against scarlet fever is discovered, we should continue with an intense campaign in the effort to eliminate scarlet fever with the present methods.

Public health campaigns demand that any method which is to be used should be as simple as possible. With this in mind, the combined soap toxin was used in order to reduce the number of inoculations necessary to immunize against two diseases. The use of combined vaccines appealed to others, notably Glenny and Zoeller. They attempted to develop such a combination, but as yet have been unable to use such a product clinically, due to the lack of a suitable detoxifying agent.

With Larson's method of detoxifying certain toxins with a low percentage of sodium ricinoleate, it immediately appeared feasible to attempt such a combined method of vaccination. The work up to date has been conducted with a combined soap toxin containing both scarlet fever and diphtheria toxin, but the possibility still remains that some day we may have a multiple combination which may be used early in childhood as a preventative measure against all of the more common diseases of childhood.

Many thousands of doses of combined soap toxin have been given. The outstanding feature is the complete lack of reactions. If any reaction takes place, it is nothing more than a slight local redness at the site of the inoculation.

Without the use of sodium ricinoleate to detoxify the scarlet toxin, no other method except giving pure scarlet toxin in small doses is available. When pure scarlet toxin is given, even in small amounts, reactions especially in older children almost always occur. It is also necessary to repeat the injections many times in order to give enough toxin to produce immunity. In addition to the scarlet toxin, the soap toxin has the advantage of containing the bodies of the streptococci organisms themselves, which produces an immunity not only against the toxin, but against the virulence of the organisms themselves.

The combined soap toxin contains the same amount of diphtheria toxin that is used in toxin-antitoxin. The soap toxin contains no horse serum, and for this reason does not sensitize the individual, and eliminates the danger of possible anaphylactic reactions later on if it ever should become necessary to give some antitoxin containing horse serum. In addition, this soap toxin mixture is stable under all conditions of temperature.

The combined soap toxin used during the past year is a 3 per cent solution of sodum ricinoleate containing 1,000 million scarlet fever streptococci organisms and their toxin and 0.1 L+ diphtheria toxin to each c.c. One c.c. of this solution is given subcutaneously over the biceps, and repeated at weekly intervals for three doses. Over 40,000 doses of this combined soap toxin have been administered without severe reactions. Occasionally there is a slight local redness lasting for twenty-four to forty-eight hours. The inoculation is no more painful than an ordinary hypodermic injection.

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minn., June 30 to July 2, 1927.

In the city of Minneapolis, where some 13,000 school children were vaccinated with the combined scarlet fever and diphtheria soap toxin, statistics over a six months period show that while one in every fifty-four children in the city not vaccinated developed scarlet fever, among the vaccinated only one in 520 developed that disease. In other words, the incidence of scarlet fever is 15 times greater among the unvaccinated than among the vaccinated. With diphtheria the result was even more striking. Of 660 cases of diphtheria occurring in the city during the six months period, only two cases occurred among the vaccinated children. The ratio of protection of the vaccinated over the unvaccinated is forty-seven times.

In one institution of 250 patients where it has been a routine to inoculate all new cases with three injections of combined soap toxin, they have had no cases of diphtheria develop during the past year. Previous to this time, they had as many as 40 cases constantly in quarantine. For several years it had been routine treatment to give toxin-antitoxin, and the incidence of diphtheria was as high in those treated as in the untreated. During the past year, two maids and one nurse developed scarlet fever, exposing the entire institution. Only two children were diagnosed as having scarlet fever. One of these due to an oversight had never been given the combined soap toxin; the other had received three injections and had a very mild type of scarlet fever.

Another institution with 60 patients, during the past year had four attendants and twelve children with positive cultures but with no clinical symptoms of diphtheria. One child who had received only one inoculation shortly before becoming ill died of diphtheria. One child who had received two injections of soap toxin was seriously ill with diphtheria but recovered.

These clinical observations are so striking that it would appear advisable to endorse a state-wide campaign in an effort to entirely eradicate scarlet fever and diphtheria as dangerous diseases of childhood. Surely, the use of a combined toxin giving protection against several diseases with fewer injections necessary, is the best method to successfully put over a campaign of immunization. We feel that the combined soap toxin meets all the requirements of a satisfactory vaccine. It gives no reactions, is stable under all conditions, contains no horse serum, contains the scarlet organisms as well as the toxin, and makes it possible to immunize against more than one disease with the same common vehicle.

CULTURES OF LACTIC ACID PRODUCING ORGANISMS

Pseudoscientific promotion of lactic acid producing bacteria has become familiar, and in some instances it approaches outspoken quackery. The Council on Pharmacy and Chemistry of the American Medical Association has attempted from time to time to issue conservative, tolerant statements regarding the status of the uncertain lactic acid bacillus therapy. Furthermore, it has endeavored to establish the conditions under which alone, if at all, actual implantation effects can be expected. Thus, acidophilus milk and broth cultures and concentrates of *B. acidophilus* are not considered acceptable unless the number of viable organisms contained in a stated quantity is clearly stated, and the broth cultures and concentrates are made to indicate the need of the coincident administration of carbohydrates. The wisdom of the Council's cautions is indicated by the recent investigations of James in the microbiologic laboratory of the Bureau of Chemistry, U. S. Department of Agriculture. This survey of a number of marketed preparations indicated that samples representing cultures of both *B. acidophilus* and *B. bulgaricus* are not infrequently worthless. As was anticipated, the milks showed the highest average counts, the whey cultures next to the highest, and the solid cultures the lowest. (Jour. A. M. A., July 30, 1927, p. 374.)

LIVER EXTRACTS IN ANEMIA

The striking effect of feeding liver and certain preparations of liver on a number of physiological processes has been established. In the case of growing animals, it appears to promote rapid gains in size. The extraordinary effect of diets including liver on severe anemias of long standing in dogs has been shown. Vigorous regeneration of hemoglobin and red blood cells can be brought about by feeding the hepatic tissue of various species, beef, pig, sheep, calf and chicken having been tested with unquestionable success. Striking effects have been obtained in pernicious anemia with diets containing large amounts of liver in one form or another. Studies undertaken to determine the constituents of liver which are effective in pernicious anemia have been made and potent concentrates have been obtained. (Jour. A. M. A., August 13, 1927, p. 524.)

SCARLET FEVER AND DIPHTHERIA PREVENTION REACTIONS AND OBSERVATIONS IN 2,000 IMMUNIZATIONS*

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I HAVE TWO series of scarlet fever immunizations to report in which we used two different vaccines, and undertook each series with an entirely different object in view.

The first or smaller series is a report on immunizations by the one dose method.

CHART I

Each dose equals 3000 S. T. U.
Children under 20 years Av. 12.

		M.	F.	T.	%
Dick tested		251	170	421	
Pos. to Dick		36	48	84	20+
Neg. one dose		31	35	66	78+
Neg. 18 months		12	16	28	42+
84 Innoc.	No. react			29	34+
	Slight loc		+	18	21+
	Moder. loc		++	21	25+
	Severe loc		+++	16	19+
	Systemic react			1	1+

In this series of cases, the children ranged from 1 to 20 years old (none over 20) with an average age of 12+ years, and each child, regardless of age, was given the same dose of Larson's sodium ricinoleate scarlet fever vaccine, which was equivalent to 3,000 skin test doses.

The ultimate object of this series was to determine the length of the immunity acquired by this one injection of 3,000 skin test doses, which was a much larger dose than was ordinarily employed at that time.

For this series we selected 251 males and 170 females, total 421 children all under 20 years of age. These children were all Dick tested with the usual Dick test solution, using 0.1 c.c. intradermally. Of this number, 36 males and 48 females, total 84, or 20+ per cent, reacted positively to the test. This is of course a very low percentage, a much lower percentage of positive reactions than you will ever experience in private practice, but the children tested were all inmates of an institution where scarlet fever has been endemic or epidemic a great deal of the time, so the large number of immunities were undoubtedly due to a previous attack of scarlet fever. The apparent discrepancy of having 48 out of 170 females against 36 out of 251 males react positively to the Dick test, may be accounted for by the fact that the average age of the females was lower than the average age of the males; hence they reacted in inverse ratio to the number tested.

We then gave these 84 children (36 males and 48 females) who reacted to the Dick test, one dose of 3,000 skin test units of Larson's sodium ricinoleate scarlet fever vaccine. The following chart indicates the reactions in this test:

CHART II

Number	Percentage	Reaction
29	34	None
18	21	Slight (+)
21	25	Moderate (++)
16	19	Severe (+++)

In one case only, we had a general reaction which consisted of a scarlatinaform rash which lasted about twenty-four hours.

Subsequent Dick tests showed that 31 males and 35 females, total 66, or 78+ per cent, became negative to the Dick test following the one dose of the vaccine. Dick-testing these 66 cases was continued at irregular intervals, for a period of one and a half years, or until December, 1926, at which time (eighteen months after inoculation) we re-Dicked, using Dick test solution ten times as strong as the ordinary Dick test solution, and found that we still had 12 males and 16 females, total, or 42+ per cent, retaining their acquired immunity.

Although the single dose method is not uni-

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versally recommended at present, I report these cases to show that the immunity lasts long enough to protect through an epidemic, and in a certain percentage of cases seems to be quite permanent. I therefore strongly recommend its use in cases where, for some reason, it is impractical to use the three dose immunization.

In the second or larger series of cases, we used Larson's diphtheria and scarlet fever vaccine combined. Our primary object in this series was to give the combined vaccine a clinical test, so we discarded both the Schick and the Dick tests, and gave to each and every child three injections, one week apart, of the combined vaccine.

The secondary object in view with these inoculations was to determine the amount of reaction of the combined vaccine.

CHART III

Combined vaccine given to 955 males; 976 females; 1931

Extreme age limits	Minimum 6 mos. Maximum 75 yrs.
Average age of group	26 yrs.
Number of doses given	5793
of which	2375 or 82.25 % M.
and	1459 or 49.82 % F.
Total of	3824 or 66.00 %

Gave no reaction of any kind to any injection. 34% reacting.

In this series we inoculated 955 males and 976 females, total 1,931 cases; the extreme age limits were minimum 6 months, and maximum 75 years, with an average age of 26 years. To them we gave a total of 5,793 doses. Of this number, 2,375, or 82.25 per cent, of the males and 1,459, or 49.82 per cent, of the females, or a total of 3,834, or 66 per cent, gave no reaction of any kind to any of the injections.

The remainder of the cases, 1,957, or 34 per cent of the total, reacted as shown in the following chart to one or more doses (some reacting to only one dose, some to two doses, and some to all three doses).

The local reactions we classified into one, two and three plus, according to the severity: one plus being a small reddened area up to about the size of a quarter, two plus indicating a reddened area varying in size from a quarter to a silver dollar, and a three plus meaning an area larger than a silver dollar, with or without some local induration.

REACTIONS OF ALL KINDS, 1,947, OR 34 PER CENT

		Male	Female	Total	
1st	+	84	171	255	630
	++	32	199	231	
	+++	11	133	144	
2nd	+	105	189	294	628
	++	33	180	213	
	+++	3	118	121	
3rd	+	125	194	319	662
	++	52	157	209	
	+++	27	107	134	

This table shows us two things: (1) that there is very little difference in the number of reactions occurring with each dose, and (2) that there seems to be a definite ratio of the reaction inversely to its severity as follows:

No reaction at all	3,846	66%
One plus reaction	868	15%
Two plus reaction	635	11%
Three plus reaction	399	8%

In addition to the local reactions we had only two general or systemic reactions, meaning only one general reaction to 3,000 injections. These two general reactions were quite similar, both presenting a scarlatinaform rash; slight elevation in temperature; slight headache and general malaise—all which disappeared in from 24 to 36 hours.

In connection with the reactions I wish to mention that we used three different sites for the injections. About one-third of the doses we gave in the sub-scapular muscles, and about one-third in the gluteal muscles, and the balance in the deltoid. Of the three different locations, we had the largest number of reactions where we used the deltoid, and the least where we utilized the sub-scapular muscles.

I believe these figures are sufficient to show

that the diphtheria and the scarlet fever vaccine combined, and given in the same injection, does not produce any greater reaction than when either is used alone, and the reactions are all so mild that they are of no consequence.

Now, to return to the primary object of these immunizations, which was to make a clinical test, regardless of skin tests or laboratory reports. Here I must preface my conclusions by stating that in the institution where these inoculations were given, scarlet fever has been a very common disease, and that diphtheria in endemic or epidemic form has been with us almost constantly for the past 30 years. But since giving the inoculations we have not had a single case of either disease for a period of six months, and we hope to be able to extend this to a period of one and a half to two years.

STATEMENT OF THE FACTS AND OPINIONS AGREED TO BY THE INTERNATIONAL MEETING ON CANCER CONTROL HELD AT LAKE MOHONK, N. Y., U. S. A., SEPTEMBER 20-24, 1926

Although the present state of knowlcdge of cancer is not sufficient to permit of the formulation of such procedures for the suppression of this malady as have been successfully employcd for the control of infectious diseases, there is enough well established fact and sound working opinion concerning the prevention, diagnosis and treatment of cancer to save many lives, if this information is carried properly into effect.

The causation of cancer is not completely understood, but it may be accepted that for all practical purposes cancer is not to be looked upon as contagious or infectious.

Cancer itself is not hereditary, although a certain predisposition or susceptibility to cancer is apparently transmissible through inheritance. This does not signify that, because one's parent or parents or other members of the family have suffered from cancer, cancer will neccssarily appear in other persons of the same or succeeding generation.

The control of cancer, so far as this subject can be understood at the present time, depends upon the employment of measures of personal hygiene and certain preventive and curative measures, the success of which depends upon the intelligent coöperation of the patient and physician.

Persons who have cancer must apply to competent physicians at a sufficiently early stage in the disease, in order to have a fair chance of cure. This applies to all forms of cancer. In some forms early treatment affords the only possibility of cure.

Cancer in some parts of the body can be discovered in a very early stage, and if these cases are treated properly the prospect for a permanent cure is good.

The cure of cancer depends upon discovering the growth before it has done irreparable injury to a vital part of the body and before it has spread to other parts. Therefore, efforts should be made to improve the methods of diagnosis in these various locations and the treatment of the cancers so discovered.

Practitioners of medicine must keep abreast of the latest advances in the knowledge of cancer in order to diagnose as many as possible of the cases of cancer which come to them.

There is much that medical men can do in the prevention of cancer, in the detection of early cases, in the referring of patients to institutions and physicians who can make the proper diagnosis and apply proper treatment, when the physicians themselves are unable to accomplish these results. The more efficient the family doctor is, the more ready he is to share responsibility with a specialist.

Dentists can help in the control of cancer by informing themselves about the advances in the knowledge of the causes of cancer, especially with relation to the irritations produced by imperfect teeth and improperly fitting dental plates. They can also help by referring cases of cancer which they discover to physicians skilled in the treatment of cancer in this location. It may be doubted whether all dentists fully realize the help which can be obtained from *x*-ray photographs in revealing not only the state of the teeth but the condition of the bone surrounding them.

Medical students should be instructed in cancer by the aid of actual demonstrations of cancer patients, and this to a sufficient extent to give them a good working knowledge of the subject.

The most reliable forms of treatment, and, in fact, the only ones thus far justified by experience and observation, depend upon surgery, radium and *x*-rays.

Efforts toward the control of cancer should be made in two principal directions: (1) the promotion of research in order to increase the existing knowledge of the subject, and (2) the practical employment of the information which is at hand. Even with our present knowledge many lives could be saved which are sacrificed by unnecessary delay.

MEASLES PROPHYLAXIS*

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WITH ALL our vaunted progress measles is still to be regarded as somewhat of a reproach to the profession, claiming as it does an annual toll of hundreds of innocent victims. Still regarded by many of the laity as a harmless affection, the needless exposure to its dangers goes on apace, and many children are doomed to a life-long invalidism even if they do not succumb to its ravages. For many years research workers in all parts of the civilized world have striven unceasingly to pry into its secrets and disclose the causative agent.

This paper must necessarily be a review of the literature and of the methods advocated for the prevention and cure of this common affliction of childhood. During the past decade many attempts to modify the disease or to immunize children against infection have been made by the use of convalescent serum from patients recently recovered and from adults who have had the disease in childhood. These reports would indicate that serum from recent cases is more efficacious than that from individuals in whom a period of years had elapsed. Nicolle and Conseil, of Paris, were the first to report successful results by the use of convalescent serum. Since that time (1918) numerous reports of successful immunizations have appeared in the literature, with only a comparatively small percentage of failures.

Degkwitz, in 1920, reported a series of cases in which the use of whole blood from adult donors was used with some success. He later discarded this method on the assumption that the antibody content of adult blood was insufficient. Since that time, however, it has been demonstrated that adult blood is frequently rich in antibodies.

Kingsbury reports the successful use of convalescent serum on 395 children during an epidemic. Of these, ninety-three children were given 2 c.c. and in the next succeeding seven weeks 15 per cent developed measles; 132 were given 2.5 c.c. and of these 4.5 per cent developed the disease. Fifty were given 3 c.c. with an incidence of 14 per cent and 120 who received 3.5 c.c. showed an incidence of only 1 per cent. A total of 28 of the children treated developed the disease and only six of these developed a rash within ten days after inoculation. Apparently the ordinary period of incubation was notably lengthened and the course of the disease modified. In most of the cases reported a notable absence of complications is apparent and the severity of the attack very materially lessened. Passive immunity is said to last from two to five months. Good results have followed the inoculation as late as the eighth or ninth day after exposure. Karelitz and Levin report excellent results from the use of adult serum. They say, "It is the aim of this paper not only to increase the report of results obtained with the use of convalescent serum, but also to emphasize the fact that whole blood, defibrinated or citrated blood, and serum or plasma obtained from adults who have had measles may be used prophylactically. Thus, a child may be protected completely for a short time, or may be given partial protection and permitted to develop a mild type of measles which results in a longer and more lasting, even permanent, immunity. When it is safe to permit the child to have this mild measles, it is far more desirable than complete protection, which usually results in a very transient immunity. We feel that the modified measles is usually innocuous and may be very much less contagious than the ordinary disease."

Toomey reports results in 389 patients exposed to measles in which from 3 to 10 c.c. of convalescent serum were administered intramuscularly, in which 21 contracted measles, thirteen before and eight after the usual period of incubation of fourteen days, and in these the disease was marked by an unusual mildness.

MEASLES TOXIN

In March, of last year, Ferry and Fisher reported the isolation in pure culture from the blood of patients in the early stage of measles

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of a small gram-positive aerobic green-producing streptococcus in pairs and chains which produces an extracellular or soluble toxin specific to measles. This they have designated as the streptococcus morbilla, because of its etiologic relationship to measles as evidenced by its production of a toxin specific to measles and because no organism has previously been described as producing such a toxin. This type of streptococcus is said to elaborate a soluble toxin which gives specific skin reactions in children not immune to measles, while the reaction does not occur in those who have had the disease.

Tunnicliff and Taylor state that the green-producing diplococcus produces an extracellular toxin which gives a definite specific skin reaction in persons with a negative history, while no reaction occurs in those giving a history of having had measles. Italian investigators, while they are not in accord with the findings of American research workers, claim to have isolated the specific organism causative of measles.

Long and Cornwall, at the Boston City Hospital, after a carefully conducted series of experiments with forty-seven blood cultures taken from twenty-six patients, were unable to isolate any toxin-producing green streptococci.

It would appear that while the researches of workers in this country and abroad is not devoid of encouragement, the most successful method of preventing or modifying the course of measles at our disposal is by the use of convalescent serum or if this is not available by the use of whole blood or adult serum.

THE COMMONWEALTH FUND

The Commonwealth Fund, the philanthropic foundation established by the late Mrs. Stephen V. Harkness, is making studies in eleven northern and midwestern states for the location of the third rural hospital to be constructed under a new coöperative program initiated by the Fund last February. Farmville, Va., has been chosen as the location of the first institution under this program and Henry J. Southmayd, Director of the Fund's Division of Rural Hospitals, 1 East 57th Street, New York City, recently announced that the contract for the construction of the Farmville hospital has just been signed. Several hundred communities have been considered for the location of the second hospital unit, which will also be placed in a southern state, and the final decision will be made in the near future.

In planning the location of its third hospital, the Commonwealth Fund is now corresponding with county medical societies and chambers of commerce in a large number of northern and midwestern cities of less than ten thousand population. The program under which the gift will be made contemplates the construction of two rural hospitals every year. In the case of approved applications the Fund contributes two-thirds of the cost of construction and equipment while the local community must contribute one-third, and in addition meet the cost of operating and maintaining the hospital.

The Commonwealth Fund, of which Edward S. Harkness is President and Barry C. Smith, General Director, was chartered in 1918 as a philanthropic foundation to carry on a wide range of activities for the general welfare. In addition to her initial gift at that time, Mrs. Harkness made several subsequent donations which increased the capital fund to $38,000,000. Child welfare, health and educational projects have constituted the principal activities of the Commonwealth Fund, which also announced last year the establishment of twenty annual fellowships for British students in American universities.

In undertaking its new program for the construction of rural hospitals the Fund desired to assist in improving conditions affecting public health and medical practice in country districts. It was convinced that rural communities, despite certain natural advantages, frequently afford a less satisfactory opportunity for healthful living than many of our cities. While the causes of such conditions are numerous and complex it would appear that the lack of a sufficient number of competent physicians is a contributing factor which in itself has many causes. In this connection there is general agreement that in many rural communities the physician finds little professional incentive either to establish himself or to remain. The preliminary surveys made by the Commonwealth Fund, as well as other similar studies, have shown that the lack of a modern and well equipped hospital has often meant retarded medical progress and inadequate public health work in many rural communities. It is in the hope of contributing toward improving the conditions of health and medical practice in at least a certain number of such communities that the Commonwealth Fund has undertaken to assist in the construction of rural hospitals.

THE SYNTHESIS OF THYROXIN

The announcement by Harington, in 1926, that thyroxin, instead of being a compound of tryptophan, is a tetraiodo derivative of the *p*-hydroxyphenyl ether of tyrosine, has been followed by a determination of its constitution. Following this, Harington and Barger prepared synthetic thyroxin. This has been shown to be identical with natural thyroxin. Thus, the first artificial production of a naturally occurring biologic product, the active principle of the thyroid gland, has been accomplished. (Jour. A. M. A., June 11, 1927, p. 1892.)

PERTUSSIS*

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THE PROPHYLAXIS of pertussis has not made such tremendous strides as has the prophylaxis of diphtheria but marked progress must be recorded.

The etiology of pertussis, while still subject to some doubt, is quite generally ascribed to the Bordet-Gengou bacillus, a small coccus-like bacillus, morphologically resembling the influenza bacillus but having distinct cultural and immunological differences. If we accept this organism as the cause of pertussis there are three possible methods of producing immunity to the disease: one the injection of convalescent serum; a second the use of vaccine; and a third the injection of toxins formed by the bacillus. Since the Bordet-Gengou bacillus does not yield a soluble exotoxin as do the B. diphtheriæ, the streptococcus scarlatinæ and the B. tetanus, this last method of producing immunity cannot be considered. The method of injecting the serum of convalescent patients, so successful in measles, has been tried in pertussis with varying measure of success.

Robert Debré prophylactically injected[1] 2/3 to 1 c.c. of serum from blood of convalescing pertussis patients; he tried this in forty patients almost surely contaminated; thirty-one were completely protected, six had a very benign and three an ordinary attack of pertussis.

Bokay[2] found prophylaxis with convalescent serum without effect but injections of vaccine from pure cultures of Bordet-Gengou bacillus protected 94 per cent of one hundred and five children.

Gillot[3] used for the prophylaxis of whooping-cough, subcutaneous injections of human blood. In one series of children from one month to six years of age, the injections were made with blood from persons who had had pertussis long before. Four children injected during the catarrhal stage did not contract the disease at all; in two injected during the catarrhal stage the disease appeared, but in a mild form. In another series the blood was drawn from fathers and mothers without whooping-cough history. Six children injected before the catarrhal stage escaped the disease; in five injected during the catarrhal stage the disease was mild. The dose of blood injected in the seventeen children varied from 2 to 5 c.c.

From the above it can be seen that insufficient study of this method of prophylaxis makes final judgment impossible at this time.

The evidence in favor of prophylactic value of pertussis vaccine is more varied and more convincing. A number of carefully trained observers have given the evidence of their experience. While this evidence is entirely subjective it cannot be lightly dismissed.

G. R. Davies[4] reports an epidemic of thirty-three pertussis cases in one hundred and seventy-six children in an institution. The remaining one hundred and forty-three children were given three prophylactic doses of pertussis vaccine and only four developed symptoms.

Aurrichio[5] used a vaccine prepared from four strains of Bordet-Gengou bacillus in forty individuals exposed to infection in the family. Thirty-eight remained healthy and two showed slight symptoms; in six days he made three injections of 2 to 3 c.c. of a vaccine containing a billion germs per c.c.

Meyer, Kristensen, and Sörensen[6] collected Scandanavian reports on pertussis vaccine; the great majority indicated that the vaccine given during or prior to incubation attenuated the disease and advantage resulted in many cases when the vaccine was given in the catarrhal stage or the first week of the paroxysmal stage.

Engen Kramar[7] reports on the value of pertussis vaccine as a prophylactic. Of sixty-nine children intimately exposed to pertussis and given the vaccine, sixteen developed the disease and fifty-three under the same condition remained uninfected. He concludes that the value of the vaccine as a prophylactic is unquestionable though not infallible.

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minn., June 30 to July 2, 1927.

C. J. Bloom[8] is enthusiastic about the prophylactic effect of the vaccine in institutions. He states that in three hundred and eight cases immunized against pertussis, only four cases developed. His technic is as follows: (1) the mixed vaccine is used, each c.c. containing 5 billion pertussis bacilli and 3.5 billion influenza bacilli; (2) this vaccine is given ten days after it has been prepared; (3) 1 c.c. is given on alternate days for three doses, then 1 c.c. every second year if complement fixation test justifies it.

C. A. Aldrich[9] concludes as to the prophylactic value of pertussis vaccine that there is definite evidence that some cases were prevented, although in the absence of controls the percentage could not be estimated. Only four of seventeen patients given prophylactic treatment developed pertussis.

H. M. Brouwer-Frommann[10] reports that thirty-eight children under the age of three in an institution all contracted pertussis from one child who had been exposed. All were given vaccine injections as soon as the disease was recognized. It did not prevent the development of the disease, but it was in such a mild form in all that the conclusion seems justified that the vaccine had attenuated the whooping-cough infection.

About ten years ago, at the instigation of Dr. W. P. Larson, I tested pertussis vaccine by means of the complement fixation test, a method of determining the presence of specific antibodies. The evidence in favor of pertussis vaccine cited above was purely subjective, but if the complement fixation test was positive after the injection of pertussis vaccine, we would have a definite objective test and therefore of greater scientific value. As a result of this work, extending over several years, I came to the following conclusions[11,12]:

Pertussis vaccine should be employed only when freshly prepared and without preservative. By fresh vaccine is meant a vaccine less than one week old.

The most effective dosage is one billion, one and one-half billion and two billions given on alternate days for three does.

It is most effective as a prophylactic but should be of great value in the early catarrhal stages of pertussis.

In doubtful cases of pertussis the vaccine should be administered before an exact diagnosis can be made, especially during an epidemic or where there is a history of previous exposure.

Since that time this work has been confirmed by other observers but very little new added. Of decided interest, however, is the work of Krumweide et al.,[12] who have shown that two different types of pertussis bacilli can be separated with different antigenic powers. This only confirms our previous clinical ideas.

In conclusion, pertussis vaccine is the best instrument for prophylaxis against whooping-cough. It should be freshly prepared, not over two to four weeks of age and should be given in doses of one billion, one and one-half billion and two billion every other day for three doses. Care should be taken that this freshly prepared vaccine contain different strains of bacilli and should have both types demonstrated by Krumweide.[12] The immunity, relative or absolute, lasts only a comparatively short time, so that the vaccine should be given only when there is a suspected exposure or in the presence of a widespread epidemic.

The realization of the importance of freshly prepared vaccine is a great advance in the prophylaxis of whooping-cough, but much more confirmative work needs to be done.

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DISCUSSION ON SYMPOSIUM BY
DRS. LARSON, MCBROOM, CHRISTISON AND HUENEKENS

DR. I. A. ABT (Chicago): I hesitate somewhat to speak on this matter of vaccination, immunity, prophy-

laxis or treatment of this group of infectious diseases because the clinical experience has been of such short duration that we hardly know how to evaluate this whole subject.

Insofar as scarlet fever is concerned, it is true that we must be very grateful to these scientific men who have discovered the toxin and who have pointed the way for prophylaxis in treatment. Still those of you, like myself, who have had considerable experience in the attempt to prevent or protect the child against scarlet fever by these injections, and who have attempted to treat these children with these sera, or these antitoxins or vaccines, will feel that something more needs to be learned.

I think most of you had the experience, when you gave the first prophylactic serum where you were directed to give five injections at various periods, that the child became almost as sick as though he had a moderate scarlet fever. He had fever, eruption, sometimes a little sore throat. That was the first prophylactic treatment. Then there was the other prophylactic treatment discovered, used or advised by the New York group, not making any personal allusions. There you got serum reactions when you used horse serum for prophylaxis against scarlet fever, sometimes very severe reactions.

Then about that time, when I was working in this way, my attention was called to the serum, vaccine, toxin and soap toxin that was made up in this part of the country and I used that. First, I used only one injection as a prophylactic dose and I saw less violent reactions, but on checking up with the Dick test we found that, in a period of six months or a year, in most instances we didn't have a negative Dick test and we gave one or two more injections of this soap toxin and in many cases found we had a negative Dick test.

Of course, I don't know what a negative Dick test means any more than I know what a negative Schick test means. This point was brought out by one of the previous speakers, Dr. Larson. Suppose it does mean that the patient has a certain amount of immunity, how much infection would it require to work that amount of immunity which the patient has? Of course, I don't know anything about that.

The point of it all is, then, that so far as prophylaxis is concerned there are these various sera on the market and it seems to me that it is a question now of accumulating clinical evidence. The immunologists and the bacteriologists are very important in improving our knowledge, but it seems to me we clinicians must go out now and test these things and make accurate clinical observations.

The important thing, it seems to me, is how many children will be taken down with scarlet fever in a certain community after they have been injected with any one of these sera, and how long a time after the injection will they fall ill with the disease? Such clinical observations no doubt will be of the greatest value.

The same thing may be said of the treatment of scarlet fever. Which one of these sera is best calculated to bring about the results in treatment? I think there is still some difference of opinion, and I think most careful clinicians after a year or two of experience are beginning to feel they don't want to give these antitoxins in the milder cases. I know I don't. I see lots of scarlet fever. I leave these patients and go away and think, "Well, that one isn't bad enough," and I hope it isn't going to be bad enough so that I have to give antitoxin, because to tell you the fact of the matter (and I hope I am not presenting an extreme view) I am just a little bit afraid of some of these new antitoxins on account of the severity of the reactions which I and a good many of my colleagues have observed.

With the measles there is nothing to add. I think Dr. Christison stated the matter very fully. The convalescent serum is the one that is to be advised, more particularly in prophylaxis, and it seems to me I have seen many times within the last four or five years instances in a family where measles was prevalent, where, if the child were given the convalescent serum a week or possibly ten days before the expected occurrence of the disease in this particular child, the measles was very much modified. As a rule it was an extremely mild affair, and it seems to me this convalescent serum should be used in these cases, especially in very young children. I think every one of us dreads measles in a tiny baby, the newborn baby.

I had this experience: A mother contracted measles shortly after she was confined. The baby was a few days old when I saw it. We gave this newly born infant some of this convalescent serum, and while in two or three weeks the baby had a very slight rash and a very slight fever elevation there never was a definite measles. I think it was very fortunate that we could give such a baby a convalescent serum as a prophylaxis. I think that is the indication.

So far as the whooping cough vaccine is concerned, I think we are pretty much in the same position that we are with reference to these other vaccines and serums.

I think Dr. Huenekens stated the point when he said that we don't know what the toxin is, that the toxin hadn't been discovered, or wasn't known. It is very definite to talk about antitoxin and immune producing serum. On the other hand, I think this is true: If the whooping cough vaccine is given sufficiently early, and as was brought out by Dr. Huenekens years ago, if it is given sufficiently fresh, the force and the severity of the disease is diminished and the individual paroxysms are favorably influenced.

On the other hand, I think every one of us has seen cases of whooping cough where we give the vaccines in the usual way without very gratifying results. Then I want to say, parenthetically, whooping cough is that one disease where almost every remedy in the pharmacopeia, everything in the way of mechanical devices, where all kinds of lights and physical therapy—even to incubation—have been tried with favorable reports. But, on the other hand, coming back again to this whooping cough vaccine, I have yet to hear any unfavorable reports and I have yet to hear of any untoward results which occurred from the use of whooping cough vaccine, and there are a great many men who believe they obtain favorable clinical results.

NOTES ON HEART BLOCK*

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PATIENTS SUFFERING from heart block repay careful study. The most interesting features of heart block are as yet subjects for discussion. The mechanism of the attacks is as yet only partly understood.

It may help to an understanding of what follows to refer to the photographs herewith presented which were taken of beef hearts, in which Dr. Cardle and myself have been able, following the method of Cohn, to inject the branches of the His bundle. We are still working on the technic of opaque injections, with a view to obtaining *x*-ray pictures of the bundle taken through the heart muscle. It will be noticed that numerous blotches in the course of the branches occur. These are due to leaking through of the injected fluid in the sheath of the conducting structure and do not represent nodes.

It is usually not difficult to recognize in the photographs the main divisions of the His bundle as described by Gross. In the right heart the right branch of the bundle proceeds from the septum as a column until it reaches a moderator band, where it divides into a network of fibres spreading out over the inner surface of the right ventricle. The left branch passes over the top of the septum into the left ventricle, and spreads out almost immediately over the inner surface of the left ventricle in like manner as the network in the right ventricle is distributed. It is not so easy to recognize what Gross calls the anterior and posterior divisions of this network.

It is regrettable that so little histological material is available to explain the location and nature of the lesions in heart block. Material is, however, accumulating very rapidly. The lesions of course are various. Most of them are vascular and in or near the main bundle. Oppenheimer made extremely painstaking examination of three hearts in death from heart block. In one he found a calcareous deposit in the course of the main bundle, just below the auriculo-ventricular node. A second case showed sclerosis of the small vessels in the main bundle which, undoubtedly, was responsible for the block. There was also coronary sclerosis. The third case had an infected infarct of the ventricular septum. This was very near the junction of the right and left bundle branches. The lesions of syphilis are very rarely found in the bundle tissue. Arteriosclerosis and resulting ischemia of tissue are overwhelmingly the lesions noted.

Without question we have until recent years missed a great many heart blocks becouse of the fact that there were no Stokes-Adams attacks present. We now know that a slow pulse more often is due to conduction trouble in the heart than was formerly recognized. A generation ago the teaching was that, especially in elderly people, a slowing of the pulse was due to a general fibrosis having reference particularly to heart muscle. At present one should always be suspicious of heart block when the pulse becomes slow and is not otherwise explained. It is entirely possible, without instrumental means, to diagnose a probable heart block in such a case.

Taking the modern conception of the conduction apparatus in the heart, we may assume that certain things are fairly well accepted as settled. The main nodes and the main bundle and probably the first portion of the branches have their own peculiar blood supply. The remainder of the His network takes its blood from the vessels of the myocardium upon which it lies. The rhythm of the heart beat is normally under the control of the sinus node, which is supplied by the terminations of the pneumogastric plexus as well as the terminations of the sympathetic, so that inhibitors and accelerators of rhythm act through this node. The auricular-ventricular node may initiate a slow rhythm; also it is an accepted theory that other and lower centers along the whole length of the His bundle have excito-motor functions which may give rise to still slower rhythm of the heart.

Experience shows that we find many cases of block following acute infections, especially the acute infections like influenza. This suggests the possibility that lesions which may be the basis

*Read before the Minnesota Society of Internal Medicine, University Hospital, Minneapolis, June 6, 1927.

for heart block have existed silently before the infection only to produce symptoms when the threshold of resistance is lowered by weakness as would be caused by an acute illness. Opposed to this hypothesis would be the clinical observation that heart block does not show itself at the height of the infectious process, but from two to six weeks later.

Fig. 1. His bundle injected in beef heart. Right ventricle.

Symptoms of heart block do not disappear with regaining health, attacks recurring or becoming a permanent block though possibly incomplete in form. However, we find possible relationship between the time of onset of heart block quite frequently with a preceding illness, particularly an acute infectious process.

The following case is typical.

The patient, a physician, in active surgical practice, fainted while engaged in an examination. He had had an ambulatory attack of influenza five weeks before. A slight irregularity of his pulse was noted for several weeks before the fainting attack. Dr. Geo. D. Head saw him immediately, as he was in the hospital at the time, and noted a very slow pulse, which he attributed to heart block. The patient after a few hours' rest refused to consider his condition as serious and continued to attend to his work. His pulse maintained a fairly regular rate between 50 and 60. A second attack without fainting lasted about twenty-four hours with a pulse rate of 28 to 32. The cardiogram showed typical heart block. After a rest of ten days he seemed quite restored to normal.

During the following summer and fall he was frequently examined and nothing but a normal heart action was seen, although he passed through a gastro-intestinal attack without disturbance of his circulation. Later on, an attack of influenza more severe than the previous one was followed in four weeks by a return of his heart block, this time accompanied by severe Adams-Stokes seizures and convulsions. Adrenalin

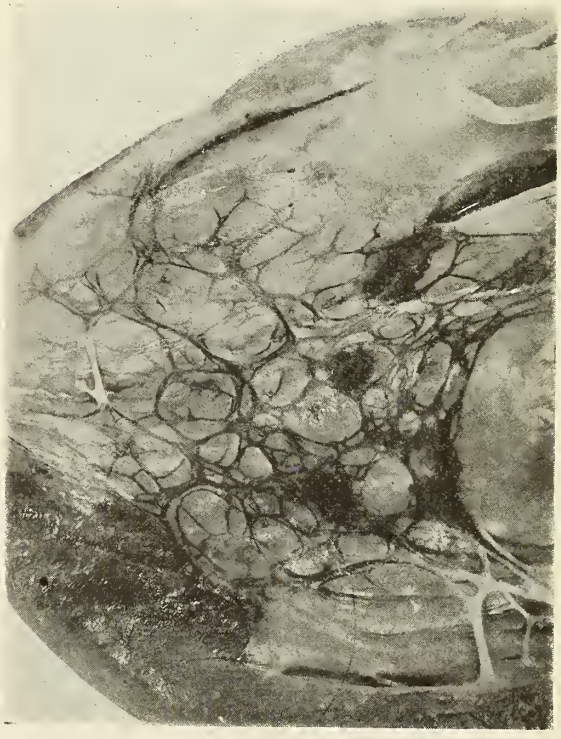

Fig. 2. His bundle injected in beef heart. Left ventricle.

and digitalis were given with slight benefit. The same is true of coffee or caffeine, which gave a temporary relief, but the successive attacks progressively weakened the heart action. It was thought best not to give barium chloride, as too dangerous. Convulsions and syncope recurred at intervals of from five to fifteen minutes in spite of all remedial agents. Barium chloride was tried in the later stage and its use was followed by increased force to the ventricular beat for short but transitory periods of less than one minute, during which time the rate of the heart rapidly changed from 22 to between 60 and 80. The syncopal attacks followed so rapidly that it was impossible to attach any significance to the sequence of events. It was evident, however, that barium chloride had a powerful stimulant effect.

This patient never had, previous to his heart block, a systolic blood pressure above 125 mm. of Hg. The pressure dropped during his last illness to 90-100 systolic.

This case will stand as an example of many others which followed acute illness of some sort.

As bearing on the question of injury of slightly different nature the following case may be of interest.

A young man of twenty-six in the navy had an attack of heat exhaustion in the West Indies, was unconscious two days, and was later in the navy hospital at Washington for several years. During this period he had numerous attacks of unconsciousness coming on as a rule during tests. After discharge he continued to have similar attacks, usually induced by shock or excitement rather than by exertion. Several times he was carried to a hospital, unconscious, in a street seizure, and invariably given digitalis.

This man's cardiogram showed a permanent 2 to 1 block. He was a migratory animal and the writer gave him, to be attached to his undershirt, a copy of his cardiogram with a note warning anyone against giving him digitalis as he was subject to Stokes-Adams attacks.

One would prefer to leave the subject of therapy untouched, unless allowed considerably more space than this for its discussion. Drug therapy is or should be distinguished by its narrow limitations. It is best to know what to avoid, since the condition paths in the heart are quite subject to the deleterious effect of medicines which influence the heart nodes. Of late, however, considerable has been written in regard to the use of barium chloride in heart block. The theory upon which it is used is that, impulses from the auricular side of the heart being blocked, the drug is capable of raising the sensibility of the auriculo-ventricular node, thus initiating impulses of the ventricle and maintaining the circulation. Reports of five cases at least, where this has apparently taken place, have been published in the Journals *Heart* and *The Archives of Internal Medicine*. Contra, the case of the physician above reported in whom it had no good effect and many others with the same ending. It has also been noted that its administration has been followed by bad or even fatal results.

Hare and others described the effect of barium chloride in moderate doses as increasing the rapidity of the heart beat while steadying the rhythm. The output of blood from the heart is increased, as is also the arterial tension. It probably has no effect upon the vagus or upon the vasomotor center, the short period of stim-

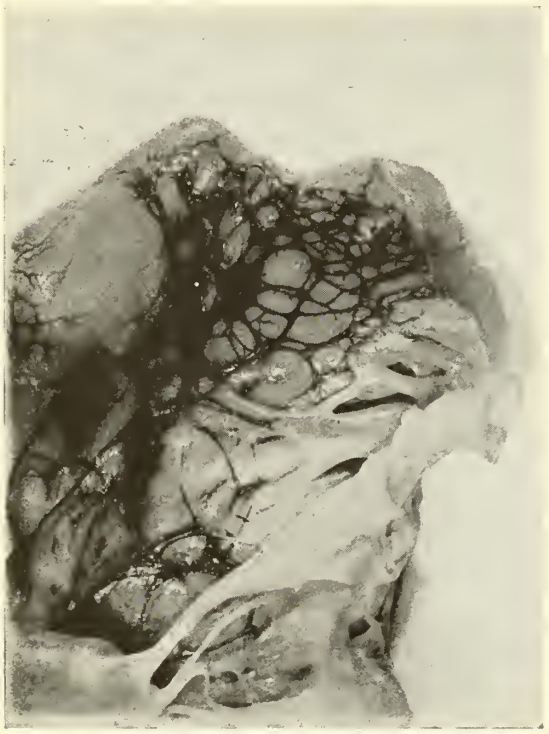

Fig. 3. Beef heart, His bundle injection. Right ventricle.

Fig. 4. His bundle injections in beef heart. Interior of left ventricle.

ulation arising from action of the drug upon the accelerator nerves. Toxic effects are shown by gastro-intestinal irritation, vomiting, purging, collapse, convulsions, and death when the dose is sufficiently large. The question arises whether this is not in part due to poor elimination in a state of heart exhaustion which occurs in heart block. Death results from cardiac arrest due to the violent contractile effects upon the heart muscle. Respiratory arrest occurs almost simultaneously.

From the above and the few cases in which it has been given with benefit, it is fair to assume that if used at all it should be early in the attack of heart block before the heart is exhausted, and then only in minimum doses.

The following is a favorable case apparently:

A Pullman car conductor, aged 44, with negative previous history except that he had been in six train wrecks in ten years' time, was troubled by shortness of breath for three weeks before his first examination. A weak first sound accompanied a pulse rate of thirty-six. The pulse sank to eighteen and he had several typical attacks of syncope accompanied by tonic convulsions. His physician, Dr. A. E. MacDonald, was counselled to try him on barium chloride, which was administered every four hours in doses of one-third of a grain. The next day he had less trouble from his seizures, which had been up to that time nearly continuous. The drug was continued in lessened doses for four days, when the patient seemed to have recovered, and has been well ever since.

In the above case it will be noted that while the symptoms were severe the attack had not lasted so long as to produce heart exhaustion, and it is quite possible that the drug did prevent some of the syncopes from occurring. There seems to be no substitute for the supporting treatment of the heart. Adrenalin, digitalis when the heart shows signs of weakening, caffeine when needed for heart and arterial tone, are apparently our best drugs but only to be used with great discretion.

CACTINA PILLETS AGAIN

Twenty years ago preparations of *Cactus grandiflorus* —the Mexican night-blooming cereus—had considerable vogue, chiefly because of the extravagant advertising claims made for two preparations said to be derived from it—"Cactin" and "Cactina." In 1908, Sollmann thus ironically described the claims made for these preparations: "Should the heart be too slow, cactus quickens it; if the heart is too fast, cactus slows it; should the heart be too weak, cactus strengthens it; if the heart is too strong, cactus weakens it; does the heart wobble, cactus steadies it; if the heart is normal, cactus does not meddle with it." Subsequently a number of reports were published showing pharmacologically and clinically that preparations of cactus were inert. As a result of the thorough exposure of the worthlessness of cactus preparations, proprietary houses have generally abandonded their exploitation. While "Cactin" (now called "Cactoid") is still offered for sale and is still the "joker" in a proprietary morphine-scopolamine preparation, no claims for it are advanced. In the case of "Cactina Pillets," however, the proprietor—the Sultan Drug Co.—still finds it profitable to continue advertising in a certain class of so-called medical journals and to continue making the claims that have been so thoroughly disproved. To those who give credence to these advertising claims, a recent clinical study will be of interest: it reaches the conclusion that Cactina Pillets are no more than a placebo, thus agreeing with Sollmann, who twenty years ago called the preparation a psychic cardiac tonic. (Jour. A. M. A., July 9, 1927, p. 138.)

ETHYLENE—II.

The A. M. A. Chemical Laboratory reports another examination of the quality of ethylene for anesthesia which is on the market. The Laboratory reports on the composition of "Ethylene for Anesthesia" of the Certified Laboratory Products (which has been accepted for New and Non-official Remedies) and a specimen of the ethylene of the Kansas City Oxygen Gas Company, the quality of which had been questioned in a hospital. The laboratory found both products to meet the requirements of New and Non-official Remedies. The Laboratory repeats its previous recommendation, that physicians use only the brands of ethylene described in New and Non-official Remedies. (Jour. A. M. A., August 6, 1927, p. 451.)

LUCKY TIGER

This is a dangerous nostrum sold for the treatment of dandruff, eczema and sore feet. Because of reports of severe skin irritation following the use of "Lucky Tiger," the A. M. A. Chemical Laboratory analyzed it. The Laboratory concluded that the preparation consists essentially of ethyl (grain) alcohol, methyl (wood) alcohol, sodium salicylate and sodium arsenite. The amount of arsenic present as sodium arsenite was about one-tenth as much as found in solution of potassium arsenite (Fowler's solution). When the amount of the preparation that will be used in an application is considered, it can be readily appreciated what a relatively strong solution of arsenic this is. This preparation has no place among legitimate home remedies. (Jour A. M. A., August 13, 1927, p. 541.)

BOVINE TUBERCULOSIS AND ITS RELATION TO MAN*

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WE ARE living at a time when it is highly essential for the medical man to be able to successfully convey health facts to the public. Almost daily we are called upon to voice our opinions concerning various health problems and practises and we are ultimately to be judged competent or incompetent according to the correctness of our response. And the correctness of our response is dependent upon the amount of ready information we have on hand; the diligence with which we have followed and assimilated scientific knowledge. Almost each day brings to us some physical affliction resulting from a preventable cause; preventable in the sense that science has turned a spot-light on the cause of the disturbance and found a method for combating it.

The purpose of the present paper is to briefly review the subject of bovine tuberculosis in order to put in ready form facts which point to its effect on man; findings which have led us to accept that this disease in cattle is a potential disease producer in man; and proof that the scientific handling of the problem causes both a health gain and an economic betterment.

In 1865 Villemen demonstrated the transmissibility of tuberculosis by animal inoculations. In 1882 Robert Koch made known his discovery of the tubercle bacillus, and in 1890 he announced his discovery of tuberculin. It remained, however, for Theobald Smith in 1898 to definitely determine by morphological, cultural and pathogenic characteristics that tuberculosis in humans and in cattle is caused by two different types of tubercle bacilli and he christened them the human and the bovine types. These four great discoveries serve as the foundation upon which is built the present day methods for the eradication of bovine tuberculosis.

Villemin's ingenious work proved that tuberculosis could be transferred from an infected field to a non-infected one; it showed that an infective source is a potential danger to a healthy surrounding. The discovery of the tubercle bacillus gave us the causitive agent. The differentiation into the human and bovine type gave us a scientific method to prove that the bovine type of tuberculosis could definitely affect mankind. And the production of tuberculin left us a test for the determination of the presence or absence of tuberculosis.

A few words concerning the course of tuberculosis in cattle should not be amiss in order to better understand the problem that confronts us in the attempt to eradicate bovine tuberculosis. The disease is marked by its insidiousness. With the production of symptoms the disease has already gone on to an advanced degree and obtained a firm foothold. The symptoms are those referable to the particular organ involved. With pulmonary involvement one of the first symptoms is a tendency to cough; with progression comes increased cough and dyspnea. Usually by this time the lymph glands of the chest and other organs may have become involved to the extent of causing circulatory or digestive disturbance. The disease brings the animal to extreme emaciation and finally death. Due to the fact that the tuberculosis is well advanced before symptoms appear in the animal the disease therefore has usually made serious inroads into a herd of cattle before the owner suspects the nature of the condition he is dealing with. It is as treacherous and subtle in its advance as a thief in the night. To wait for symptoms to appear is to wait for a one hundred per cent infected herd. A safer and surer method of detecting the disease must be used.

Lack of symptoms in an individual frequently arouses skepticism as to a diagnosis when a given test reveals the presence of a pathological lesion. The diagnosed one often asks, "How can there be anything wrong as long as I feel and look perfectly well?" And the farmer sometimes questions "How can that cow have tuberculosis when she looks and acts perfectly well?" in response to the announcement that a positive tuberculin test exists and that the cow is a source of danger.

*Read at the annual meeting of the Wabasha County Medical Society held at Lake City, July 7, 1927.

The fact has been well established that a positive tuberculin test indicates the presence of a tuberculous focus and that with a tuberculous focus the cow becomes a potential disease producer. I here quote from Calmette who in his great book on tuberculosis in man and animals says: "Rabinowitsch and Schroeder and Cotton demonstrated that calves, born of apparently healthy but tuberculin positive cows, and suckled by the mother react to tuberculin after two to six months. It appears then that, as regards the bovine species, no doubt can remain than that, as Moussn would have it, the milk from every milch cow giving a positive tuberculin reaction must be regarded as suspicious." Further evidence that milk from tuberculin positive cows is a source of danger comes from investigations of Mohler, Gehrmann and Evans (Bulletin 44, Bureau of Animal Industry, United States Dept. of Agriculture). These investigators examined the milk from fifty-six cows reacting to tuberculin but showing no clinical signs of tuberculosis. The milk was examined over a period of several months, guinea pigs being fed or inoculated with samples. Tubercle bacilli were detected in the milk of twenty-three per cent of the fifty-six cows. Other investigations have also shown us that tubercle bacilli may be isolated from the milk of apparently healthy cows showing no clinical signs of tuberculosis, but who do have a positive tuberculin reaction. These facts immediately impress upon us the value of tuberculin in detecting for us unsuspected infective sources of tuberculosis.

The question has often been raised, "Does the tuberculosis of cattle affect man?" This subject was vehemently discussed and investigated following Robert Koch's expression of opinion in 1910 that in his belief tuberculosis in cattle did not affect man. The cause for Koch's opinion was that in his investigations in this regard he had used tuberculous material in adults and not in children. Subsequent investigations have shown that bovine tuberculosis in the adult is uncommon compared to that in the child and that the closer we approach the adult stage of life the more probable is our tuberculosis to be caused by the human type of tubercle bacillus. The scientific investigations following Koch's remark proved definitely that the human family is affected by bovine tuberculosis. Parke and Krumweide, in a collection of 930 reported cases of tuberculosis studied as to the type of organism present, showed that bovine infection in adults was uncommon but that in children under five years of age 61 per cent of cervical tuberculous adenitis, 58 per cent of abdominal tuberculosis and 66 per cent of the generalized tuberculosis and meningitis was caused by the bovine tubercle bacillus. Kossel, Mitchell, Frazer, Rabinowitsch and many other investigators have reached similar conclusions as to the rôle that bovine tuberculosis plays to man. Calmette states that 6 to 10 per cent of deaths from tuberculosis in children under five years of age is due to the bovine bacillus.

Cow's milk is the principle vehicle by which the bovine tubercle bacillus is conveyed to man; hence it is a most important consideration in the problem of eradicating this disease.

The two principal methods in use for obtaining cow's milk free from bovine tubercle bacilli are: (1) Milk from a tuberculosis free cow; (2) pasteurized milk. Heating of the milk for thirty minutes at 144° Fahrenheit renders it safe to drink. The safest, however, is a combination of the two which then insures a wholesome product. Sufficient proof is not lacking to assure us that pasteurized milk and milk from tuberculosis free cows has materially lessened the morbidity and mortality rates from tuberculosis in children. William H. Park in a survey on the relation of milk to tuberculosis in New York City has shown a decrease of 22 per cent in tuberculous cervical adenitis since the institution of pasteurization in the city. He also calls attention to the striking difference in the morbidity incidence of this disease in New York and Paris, where practically all the milk is either boiled or pasteurized, as compared to that of Edinburgh where this procedure is not so generally practised. In 1910 it was shown that more than 10 per cent of raw milk sold in Chicago contained virulent tubercle bacilli. Pasteurization of all milk was then adopted in this city in 1911 as an immediate protection. This caused a definite decrease in the percentage of tubercle bacilli found in the milk, but due to faulty commercial pasteurization tubercle bacilli were still found. This led to the passage of an ordinance requiring that all milk sold in Chicago after

April 1, 1926, be obtained from non-tuberculous cows.

One of the loudest objections to the present methods in use for the eradication of bovine tuberculosis is the belief that it results in too great an economic loss. The fact that tuberculin positive cattle showing no clinical signs of tuberculosis must be slaughtered appears to the average person a massacre of an economic law. The subject, however, has received careful study at the hands of those best qualified to consider it. The report of the Special Committee on Bovine Tuberculosis Control appointed by Governor Hartness of Vermont shows a detailed investigation as to the wisdom and efficiency of the methods in use for the eradication of bovine tuberculosis. Their conclusions were that it was an economic gain rather than a loss.

Tuberculosis in cattle is a contagious and a progressive disease; hence the early detection and slaughter of animals afflicted means limiting the spread of the plague, with the result of a healthier and more valuable herd. One dairy owner made the statement that if one half of the animals in a herd were infected and killed, the remainder, then accredited, would be worth as much as the whole herd formerly.

In conclusion, let us briefly summarize the most important points to remember in a consideration of this subject.

1. Bovine tuberculosis does affect man and the most susceptible victims are children.

2. Tuberculin is a specific test showing the presence of a tuberculous focus.

3. Cows symptomless, but with a positive tuberculin reaction may excrete tubercle bacilli in their milk. What is a closed case today may be an open one tomorrow.

4. Pasteurization and milk from tuberculosis free cows are the accepted methods effective against conveying the bovine tubercle bacillus to mankind.

Civilization is slow to adopt scientific truths and so it is but natural that methods known to be effective as barriers against disease should be delayed in their application. Pasteurization in particular has proven to be a powerful preventive measure not only against bovine tuberculosis, but against typhoid, diphtheria, dysentery and other disease that are frequently conveyed by milk, but as yet its general application has not been realized. It is with this as well as with so many other scientific truths that Tennyson's dictum holds true that, "Knowledge comes but wisdom lingers."

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FOODS IN DIABETES

A generation ago the chief concern in the management of diabetes was centered in the reduction of the carbohydrate intake; consequently, in the choice of articles of diet preference was given to those relatively poor in sugars and starches. The expression "diabetic food" came into vogue to designate a variety of products having in common a content of carbohydrate notably below that of ordinary products of the same class. An official definition was formulated by governmental authority, permitting the application of the term diabetic to indicate that a food contains "not more than half as much glycogenic carbohydrates as the normal food of the same class." The outlook on the dietotherapy of diabetes has been considerably altered in more recent years. It is no longer merely the carbohydrate in the food that merits attention. Sugar can be formed from protein. Regulatory officials have become inclined to discourage the use of the term diabetic as a part of the name of these special foods. Accordingly there is no longer any federal definition of a diabetic food. Since such products are offered as dietetic aids in the control or mitigation of disease, they are regarded by food control officials as therapeutic agents rather than as foods and more properly regulated under the provisions of the Food and Drugs Act which refer to drugs. E. M. Bailey, the chemist of the Connecticut Agricultural Experiment Station, has also abandoned the term "diabetic food." In his latest report he remarks that successful diets for patients with diabetes may be formulated by proper selection of common foods quite as well as by the use of special foods. He states that many of the latter serve useful purposes but are expensive. The utilization of common foods is of increasing interest to the physician and to the patient. (Jour. A. M. A., July 30, 1927, p. 376.)

MINNESOTA MEDICINE
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Vol. X OCTOBER, 1927 No. 10

EDITORIAL

The Medical School Committee Report

The Medical School Committee of the Minnesota State Medical Association in making its first annual report at the Duluth session (see page 643), refrained from offering any specific recommendations concerning the policy of the University of Minnesota Medical School and its attached hospital, merely voicing an opinion signed by all the members of the committee, namely, that the administration and policy of tax supported medical schools and their teaching hospitals should be placed in the hands of experienced medical men.

This Committee originated as the result of a difference of opinion between the University of Minnesota Medical School and the practicing profession in the State relating to the policy of accepting pay patients in tax supported hospitals, for the purpose of teaching and to give private practice to the full time medical teacher.

As the report shows, the committee made an exhaustive investigation of the policy of ten tax supported medical schools and their attached hospitals and also obtained, insofar as possible, the attitude of the practicing medical men in the localities of these institutions.

When the careful student of this problem considers the history of medical education in the United States, from its very beginning to the present day, he is not surprised that such a difference of opinion exists.

Previous to the American Revolution, the policies of the medical schools of the first two institutions of medical education, namely, King's College in New York (now Columbia University) and the University of Pennsylvania, were in the hands of medical men, and for a period of one hundred years subsequent to the Revolution medical teaching wherever offered remained under the control of medical men, the University connection being to a great extent nominal. Thus, the traditions of medical education and the policy of its institutions continued in the hands of the practicing physician and surgeon rather than under the control of professional educators.

About a quarter of a century ago, a movement was instituted by Universities in America to place the control and policy of medical schools in the hands of professional educators, and medical education with its expensive laboratories and its premedical educational requirements became so costly that many of the older type of medical schools welcomed the change and merged themselves with State and endowed institutions, relinquishing the control of administration and policy to the institution financially and otherwise able to carry it on. With this rather abrupt change, many of the traditions and customs relating to medical education and practice were radically dealt with in the hands of the professional educator with results both good and bad from the medical practitioner's viewpoint. Many educators in America, viewing medical education as a "University discipline" and ambitious to establish teaching institutions of the European type, are willing to subsidize the practice of medicine to that end. The practicing medical men view medical education still very

largely as a function of the trained medical man and look upon the practice of medicine and surgery as an occupation. The above two viewpoints are responsible for the attitude of the practicing medical man as shown in the committee's report.

In conclusion, with a conference still pending between the Board of Regents of the University of Minnesota and the Medical School Committee of the Minnesota State Medical Association, it was perhaps wise for the committee to act as it did, leaving it to the proper representatives of medical education and medical practice to decide whether or not the tax supported teaching institution should accept pay patients in its teaching hospital to augment the salaries of its full time teachers and to increase the volume of teaching material, or restrict this type of charity hospital to the indigent poor alone and let the full time medical teacher be satisfied with the honor and salary of his University position.

Medical Lying

In an interesting article entitled "Shall Doctors Tell the Truth?" which appeared recently in Harper's magazine, Dr. Joseph Collins states the opinion that, "The longer I practice medicine the more I am convinced that every physician should cultivate lying as a fine art." Rather startling, this; and yet we agree with most of the views expressed in the article mentioned.

We cannot argue the long mooted question of whether a lie is ever justifiable; whether the end justifies the means. Certainly the individual who tells the truth in spite of consequences elicits general admiration. Lying generally goes with criminal attributes and no one expects the crook to stand up like a man and tell the truth. On the other hand we sometimes hear the expression, "lie like a gentleman," which presupposes that under certain circumstances to be a gentleman one must lie.

In the many amenities of human association the telling of the whole truth would be boorish. We are reminded of a play in which a wager had been made that a certain individual would not be able to tell the truth for a period of twenty-four hours. The attempt was made and the difficulties encountered were most amusing. If the tactful handling of many every-day situations by incomplete expressions of one's opinions is lying, we are all liars.

After this preamble we come to medical lying as a fine art. Should the physician become an accomplished liar? A careful scrutiny of Dr. Collins' article suggests that he does not really advocate any such thing. The phrase "cultivate lying as a fine art" is apparently a catch phrase to attract the attention and lead the reader to the absorption of some very good ideas. He rightly denounces such lies as pretending to recognize a disease when one is really ignorant, claiming to have effected a cure which Nature has accomplished, and pronouncing a disease incurable without justification.

We take issue, however, with Dr. Collins in his statement that a patient with malignant disease in its early stages should never be told the real nature of the disease. We hold that if the diagnosis is uncertain but the possibility of malignancy exists he should be told just that, so that the proper steps will the more likely be taken to effect a cure. And if the pathologist's report confirms the suspicion of malignancy, he may as well know the truth so that he will take proper follow-up treatment. If no recurrence occurs his knowledge of the truth has done him no harm and may have been of assistance in effecting the cure. If recurrence comes, he will know the truth in spite of deception, as the author admits.

Perhaps it is fortunate that medicine is not an exact science. There is always a chance and much more of a chance than we like to admit that a diagnosis may be wrong. This is a truth that at times offers a ray of hope and may well be told the patient, which all goes to show that the practice of medicine is still much of an art. In the handling of the many tragic situations which confront patients there is much room for tact on the part of the physician. He must be truthful, however, in all his professional relations to maintain the confidence placed in him as a counsellor and friend.

Infected Fish

It is difficult to estimate the seriousness of the situation to which Dr. Magath calls attention in his preliminary report on Experimental Studies on *Diphyllobothrium latum* which is reprinted in this number of MINNESOTA MEDICINE. That fish in various localities, notably in the lakes of Yellowstone National Park, are infected with parasites of various sorts which make them in-

edible has been rather generally known. But that the trout, pickerel, pike and perch in some of our Minnesota lakes are infected anywhere from 10 to 100 per cent by a parasite which when ingested by man may develop into an intestinal parasite is unwelcome news. The fact that thorough cooking of the fish eliminates the danger of human infestation does not, however, solve the problem, for no one wants to eat infected fish any more than measly pork.

The first step in the clearing up of such a situation is to have its existence pointed out. This has been done by Dr. Magath. The next step would seem to be the determination of the extent of the infestation. The prevention of any extension of the unfortunate situation would naturally hinge on the control of pollution of lakes and streams, particularly in the northern part of the state.

It is rather gratifying to learn that the State Board of Health with the authorization and assistance of the federal government has already begun a general survey of the whole subject of the pollution of waterways throughout the state to determine what regulations are advisable in the interests of health and from the standpoint of the fish themselves. The investigation is to be conducted in conjunction with the Department of Fish Propagation of the State Game and Fish Department, which will attack the general subject of pollution from the standpoint of the welfare of the fish.

If funds were at hand the services of a trained parasitologist would be of great value in conjunction with this survey. Of particular importance is the study of parasites in fish in connection with their pathogenicity to human beings and animals.

Here is an important problem to be attacked from every possible standpoint, not only in the interest of health but in the furtherance of the great sport of fishing.

THE JOY BEANS LABORATORIES FRAUD

One Frank Beeland of Cairo, Illinois, exploited an indecent piece of quackery under such trade names as "Joy Beans Laboratories" and "Beland Laboratories," selling a preparation called "Joy Beans" as a sexual tonic. Beland had no medical or professional training; his nostrum was put up for him by Eli Lilly and Company, Indianapolis. Beland's exploitation of this aphrodisiac was found fraudulent by the post office authorities and was barred from the use of the mails. (Jour. A. M. A., July 16, 1927, p. 225.)

OBITUARY

Dr. Peder A. Hoff

Dr. Peder A. Hoff, of St. Paul, died of a heart attack at his home Monday, September 5, following a short illness. Dr. Hoff was one of the best known specialists in the Northwest in heart disease, this being the particular branch which he had studied, taught and practiced for more than 30 years.

Following his graduation from the University of Minnesota medical school in 1900, Dr. Hoff took a post-graduate course in internal medicine at the Harvard medical school and did further work at the University of Vienna.

Returning to St. Paul he taught internal medicine at the University of Minnesota for 15 years. During this time he was also a member of the visiting staff of the city and county hospital, now Ancker hospital. Then he entered private practice.

Dr. Hoff has been a member of the St. Luke's hospital staff for 27 years. He was a member of the American Medical Association, the Minnesota Medical Association, and the Ramsey County Association.

He is survived by his widow, three brothers, Dr. Alfred Hoff, Christopher Hoff, and Charles S. Hoff, all of St. Paul, and two sisters, Mrs. H. M. Hillestad, St. Paul, and Mrs. D. N. McCall, Edmonton, Alberta.

Dr. A. L. Travis

Dr. A. L. Travis, a Minneapolis physician for the past sixteen years, died Tuesday, August 16, at the age of 66 years.

Dr. Travis was born in Wisconsin and received his elementary education in the public schools of that state. He was a graduate of the University of Wisconsin and of Rush Medical College in Chicago. He was a member of the Hennepin County Medical Society and the Minnesota Medical Society. During the war he was a member of the Volunteer Medical Service Corps.

Surviving are two daughters, Gladys Lucile Travis of Minneapolis and Mrs. C. I. Evanson of Moorhead; one son, Myrwood James Travis of Minneapolis; and three sisters, Mrs. William Williamson and Mrs. William Ames of Oregon, Wis., and Mrs. Sarah Siggelkow of Franklinville, N. Y.

Dr. John J. Platt

The funeral of Dr. John J. Platt, who was a major in the Army Medical Corps in the World War, took place Wednesday, Sept. 14, 1927, in St. Paul. Dr. Platt died September 12, following a long illness.

COMMUNICATIONS

August 26, 1927.

To the Editor:

For the past eight years I have been studying *Diphyllobothrium latum* in this State. It has been established that there is at least one endemic region in this State in and around Ely. This summer I succeeded in proving that larvæ which I first found in certain fish in these lakes in 1925 were the larvæ of *Diphyllobothrium latum*. It is evident therefore that the life history of this worm is being carried on in Minnesota. This had been thoroughly demonstrated by Dr. Nickerson with the assistance of Dr. Parker of Ely but no one before this summer had identified with certainty these larvæ in any waters of the United States. The importance of this is apparent, for it is evident that, if the condition is allowed to exist, it will not be long before more of our lakes are infected.

I am writing to you that you may call the matter to the attention of the medical profession in this State and that they may be urged to coöperate with any authorities in the State who may aid in eradicating the infestation. I shall recommend that the disease be made a reportable one, that a survey of the lakes be made to determine the degree of infestation, that persons harboring the tapeworm be required to take treatment and that they verify the treatment with negative stools, that sewage be not emptied into the lakes and streams of Minnesota and that an intensive campaign in Ely be undertaken with a view to teaching people to cook fish well before eating it and to avoid cold smoked perch, pickerel, pike and trout or salted fish of these species.

The writer wishes here to thank Dr. John Thompson and Dr. O. W. Parker of Ely, whose splendid cooperation has made this work possible.

I should appreciate your publishing this note in your Journal.

Fraternally yours,

T. B. Magath, M.D.

Olivia, Minn., Sept. 8, 1927.

To the Editor:

Referring to your editorial "Contract Practice," and quoting from same, "as far as we know, no other county society in the state has as yet adopted a fee schedule," permit me to state that I have on file in my office a fee schedule of the Camp Release District Medical Society dated January 23, 1908, and am taking the liberty of sending you a copy of our revised fee bill, adopted September 3, 1926.

Sincerely,

A. A. Passer, M.D.
Pres. Camp Release District
Medical Society.

MISCELLANEOUS

EXPERIMENTAL STUDIES ON DIPHYLLOBOTHRIUM LATUM*

PRELIMINARY REPORT

T. B. Magath, M.D.
Rochester, Minn.

Because of the severe anemia which sometimes accompanies infestation with *Diphyllobothrium latum* and the rather widespread distribution of the parasite without reference to the tropics, the disease produced by this worm has been the subject of many studies. From the zoologic standpoint the worm is of exceptional interest, because for its life history two intermediate hosts are required and also the worm is thought to be a representative of one of the more simple types of parasitic flat worm and is usually accorded a place not far removed from the trematodes and cestodaria.

All told, there have been perhaps not more than 200 cases recorded from North America, and it is generally thought that most if not all of these cases originated in Europe. However, in 1906 Nickerson reported the case of a child two and a half years old, who was born and had lived all his life in Ely, Minnesota. The child's parents were Finnish. Following this eight other cases have been reported in persons born in the United States, three of which originated in Ely, Minnesota.

In reviewing the distribution of the worm, in conversation with many physicians who visit the Clinic every year, and from a study of the cases in the Clinic, it became evident that there are at least two endemic regions in North America, one of which is in and about Ely, Minnesota, and the other in Winnipeg. It is further evident that many more cases than were formerly suspected originated in North America, for a study of the case history showed that the duration of the infestation was so short as compared with the total length of residence in North America that it is impossible to think that these patients brought the worm with them to this country.

In the summer of 1925, I made a preliminary study of the situation in and about Ely. Mining operations in Ely began about 1888. At that time the first migration of Finnish people coming up through Duluth spread into the Iron Range. It was followed 25 years later by the second influx of Finnish people together with Slavonians. Some of these Finlanders continued on into Canada and many have settled in and about Winnipeg. The Finnish people are primarily fishermen, and Finland presents much the picture of northern Minnesota with its many lakes. The fishes of the Finnish lakes are infested with the larvæ of Diphyllobothrium and the incidence of Diphyllobothrium infestation in Finland is extremely high. Many of these Finlanders stated that when they came to this country they harbored the broad tapeworm, while others insisted that they became infested after reaching the

*From the Proceedings of the Staff Meetings of the Mayo Clinic, August 3, 1927.

State of Minnesota. There are without question many persons in Ely who are infested that were born and raised there, as in the case reported by Nickerson. The Finlanders are great fish eaters and the nearer the fish is raw, the better they like it. One Finlander remarked that he was in the habit of not taking lunch on a fishing trip, being satisfied by the raw fish he caught. A common dish is fish which has been salted in brine for twenty-four hours and cut up with green peppers, cabbage, and cucumbers.

The sewage disposal in the city of Ely has been satisfactory during the last three and a half years. However, previous to that time the settling tank was incapable of taking care of the sewage, so that raw sewage was emptied into the lake; and since the incidence of infestation in the city was high, perhaps as high as 10 per cent, it is certain that countless numbers of tapeworm eggs daily went into the lake.

The life history of *Diphyllobothrium latum* was worked out by Janicki and Rosen in 1917. They showed that after the eggs hatched, which takes from nine to fourteen days, a ciliated embryo known as an oncosphere makes its way out from one pole of the egg. It is necessary that this minute animal find its way into its first intermediary host, which is a small plankton form known as cyclops. There are many species of cyclops but these investigators were able to infest only one. The larva bores through the intestine of the cyclops and finds lodgment in its body cavity. There it undergoes certain development and after about two weeks is ready to infest a suitable fish. The fishes that are capable of taking the infestation are pike, pickerel, perch, and trout. In these fishes the larva finds its way into the muscles and there remains as a tiny, white worm, unencysted. When these worms are eaten in uncooked fish or underdone fish the larva finds lodgment in the ileum and grows into the adult tapeworm. Dogs and cats may be infested as well as man.

While it had been known that people born and living in America could become infested with this tapeworm, no one had established the fact that the life history was being carried on in our American waters. Nickerson reported that larvæ were encountered in the fish of the Great Lakes, but these larvæ had no morphologic characteristics by which they could be identified. It therefore became of utmost importance to establish the fact that the life history was actually being carried on in our American waters and that our native Americans were not being infested by eating imported fish. Consequently during this summer I undertook to investigate the problem further in connection with Dr. H. B. Ward and Dr. Hiram Essex of the University of Illinois. Dr. Essex has concerned himself primarily during the summer with carrying on the early life history stages of this worm. His results will be reported at a later date. I have concerned myself with the study of the incidence of infestation in the city of Ely and the identity of the larvæ found in these fishes.

A study of several of the lakes has been made and in general it may be stated that the fishes of the lakes nearest large settlements such as Ely are more heavily infested than those of the lakes away from the beaten path. For instance, no larvæ were found in wall-eyed pike taken from Twin Lakes, which is far removed from settlements. The pike and pickerel of Burntside Lake are not heavily infested; only about 10 per cent are infested and the number of larvæ found in each fish is small. Every pike and pickerel from Long Lake, on which Ely is situated and into which the Ely sewage is discharged, was infested with larvæ, some having as many as twenty larvæ. These vary in size from 3 mm. to 2 cm. long, and are about 0.6 mm. wide. They are characteristically found with the head end making a loop so that the head is bent back and lies about midway of the length of the body of the worm. They show the typical bothria on the head.

These larvæ were fed to dogs who had been carefully studied to make sure that they were not infested with

Larva of Diphyllobothrium latum from Esox lucius of Long Lake.

Diphyllobothrium latum. To make doubly sure, the dogs were given three doses of anthelminthic before the administration of the larvæ. The larvæ were fed in bits of fish muscle and the first experiments are just completed.

July 5, a dog was fed four larvæ obtained from a pickerel at Long Lake. On August 1 his stools showed numerous Diphyllobothrium ova. The dog was killed and attached in the middle portion of the ileum were four specimens typical of *Diphyllobothrium latum,* the longest measuring three feet. The terminal segments were on each worm. This proved beyond a shadow of a doubt that the life history is being carried on in American waters, and that the Ely region is heavily infested.

The question arises as to whether the infestation was present before the Finlanders came to Ely or whether they brought the worm there. The answer to this question seems to me to be obvious. If the infestation was present before the Finlanders arrived, one should have to imagine some other mammalian host carrying on the life history, and previous to 1888 there were

relatively few people living in and about Ely. This animal could not have been the dog or cat, since there were, of course, relatively few of these animals there. It would, therefore, have had to be carried by a wild mammal. Now that the region of Ely has become rather thickly populated, these wild animals are no longer present except rarely, and so the infestation in the lake should have cleared up by now. Also the infestation should have been found in other lakes and fresh water rivers, and so far this has not been a striking fact. It seems, therefore, certain that the infestation was brought into the Ely region by the Finlanders and that the discharge of raw sewage into the lakes of that region has resulted in the infestation of the fish. The habit of eating the fish raw has kept up the infestation and the form which is *Diphyllobothrium latum* has been brought to America and implanted here. Now that it is proved the life history of this parasite can be completed in North America, there is no reason why any lake may not have infested fish if eggs find their way into it, and the proper intermediate hosts are there. Thus, the remaining native cases reported from the Great Lakes region are explained on the basis of the fact that many Finlanders are running fishing boats on the Lakes and many are undoubtedly infested. An endemic region will be established only where there are many people who eat their fish raw and where several, at least, are infested in the beginning.

Four specimens of Diphyllobothrium latum recovered from a dog fed with larvæ from Esox lucius.

The ability to obtain infestations in dogs makes it possible to study many of the interesting problems connected with this disease, and it is hoped that this will be but the beginning of a long series of studies which will result from these experiments.

This work could not have been brought to a successful ending had it not been for the splendid coöperation of Dr. O. W. Parker and Dr. John Thompson of Ely, who helped in a countless number of ways.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

SOUTHERN MINNESOTA MEDICAL ASSOCIATION ANNUAL MEETING

September 30—October 1, 1927
Austin, Minnesota

PROGRAM

September 30, 1927—Afternoon Session.
1:00 p. m.—Session opens.

Presentation of Cases—Two hours

W. P. Larson, M. D., Professor Bacteriology and Immunology, University of Minnesota, Minneapolis, Minnesota: "Malta Fever."

T. B. Magath, M.D., Mayo Clinic, Rochester, Minnesota: "The Broad Tapeworm (*Diphyllobothrium latum*) in Minnesota." (With lantern slide illustrations.)

R. G. Green, M.D., Assistant Professor Bacteriology and Immunology, University of Minnesota, Minneapolis, Minnesota: "Tularemia in Minnesota."

S. A. Slater, M.D., Worthington, Minnesota: "The Physician and the Sanatorium."

R. N. Andrews, M.D., Mankato Clinic, Mankato, Minnesota: "Congenital Pyloric Stenosis."

W. Ray Shannon, M.D., St. Paul, Minnesota: "Intussusception in Children—Eight Unusual Cases."

S. W. Adler, M.D., Winona Clinic, Winona, Minnesota: "Poliomyelitis."

BANQUET—7:00 p. m.

Toastmaster: President H. T. McGuigan, Red Wing, Minnesota.

Speakers:

Address of Welcome by the Mayor of Austin.

W. J. Mayo, M.D., Mayo Clinic, Rochester, Minnesota.

H. Berglund, M.D., Department of Medicine, University of Minnesota, Minneapolis, Minnesota: "Pernicious Anemia."

RECEPTION.

October 1, 1927—Morning Session.

8:30—President's Address.

H. T. McGuigan, M.D., Red Wing, Minnesota.

J. Jay Keegan, M.D., Dean University of Nebraska, Omaha, Nebraska: "Trends in Medical Education and Medical Practice."

H. L. Beye, M.D., Professor of Surgery, University of Iowa, Iowa City, Ia.: "Un-united Fractures of the Tibia—Etiology and Treatment."

H. T. Jones, M.D., Mayo Clinic, Rochester, Minnesota: "Burn Contractures of the Axilla."

Paul W. Giessler, M.D., Minneapolis, Minnesota: "Some Internal Derangements of the Knee Joint."

W. L. Benedict, M.D., Mayo Clinic, Rochester, Minnesota: "Foreign Therapy in Ocular Diseases."

William H. Howard, M.D., Nicollet Clinic, Minneapolis, Minnesota: "Some Phases in the Diagnosis and Treatment of Maxillary Sinusitis."

E. L. Schield, M.D., Mankato Clinic, Mankato, Minnesota: (Subject not announced.)

Herman J. Kooiker, M.D., Albert Lea, Minnesota: "Diathermy and Physical Agents in General Practice."

J. F. Smersh, M.D., Owatonna, Minnesota: (Subject not announced.)

H. C. Habein, M.D., Mayo Clinic, Rochester, Minnesota: "Perinephritic Abscess."

LUNCHEON:

Address by C. B. Wright, M.D., President-Elect Minnesota State Medical Association, Minneapolis, Minnesota.

OF GENERAL INTEREST

Dr. Emil S. Geist of Minneapolis has returned from three months' travel in Europe.

Dr. Oscar Esser, graduate of Marquette University, has located in New Ulm for the practice of his profession.

Dr. and Mrs. O. C. Strickler, who spent the winter and part of this spring in California, have returned to New Ulm.

Dr. O. B. Bolibaugh, a major in the Medical Corps of the United States Army, has been assigned to duty in the Mayo Foundation.

Dr. D. Heetderks is now established in offices at 405 Medical Arts Building, Grand Rapids, Michigan, for the practice of otolaryngology and oral and plastic surgery.

Dr. Alfred Desloges of Rochester has been granted leave of absence for two years to avail himself of a fellowship in ophthalmology in Paris awarded him by the University of Montreal.

Dr. Owen Wangensteen, of Minneapolis, has left for Europe, where he will spend the next year, studying in various clinics. He will spend some time at the Insel-Spital in Berne, Switzerland.

Dr. C. W. Paulson has sold his practice at North Branch and is now engaged in post-graduate study in Chicago. Dr. D. E. Nelson has taken over Dr. Paulson's practice at North Branch.

Dr. Albert Fritsche of New Ulm, who went to Europe last January to attend clinics at Berlin, Vienna, and other points, returned to his practice at New Ulm during the middle part of August.

Announcement has been made of the marriage in August of Dr. C. O. Heimdal of Rochester and Miss Emma Goodfellow in Superior, Wisconsin. Dr. and Mrs. Heimdal will make their home in Rochester.

Dr. F. J. Hirschboeck, Duluth, was elected president of the Northern Minnesota Medical Association at its meeting held September 12 and 13 in St. Cloud. Dr. A. J. Lewis of Henning was named vice president and Dr. M. Oppegard, Crookston, secretary-treasurer. Fergus Falls was awarded the 1928 session.

Dr. and Mrs. Franklin Strickler of Sleepy Eye spent part of the summer with their daughter on the Pacific Coast. While there, the doctor became seriously ill and had to dismiss plans of an extended trip to Alaska, and was brought back to Rochester, Minn., where he is undergoing treatment.

The publication of "Parent Education," the volume covering the Proceedings of The Northwest Conference on Child Health and Parent Education, held in Minneapolis last March, is announced by The University of Minnesota Press. Orders are being received by The Editor, University of Minnesota Press, Minneapolis.

At the September meeting of the Minnesota Academy of Medicine, Dr. John E. Hynes of Minneapolis was elected president; Dr. C. N. McCloud of Saint Paul, vice president, and Dr. Carl B. Drake, Saint Paul, was re-elected secretary-treasurer. Dr. H. F. Helmholz, of Rochester, and Dr. F. J. Hirschboeck, of Duluth, became associate members of the Academy.

The marriage of Miss Katherine E. Scott of Duluth and Dr. George D. Eitel, nephew of Dr. and Mrs. George G. Eitel, of Minneapolis, took place at the home of the bride's parents in Duluth, in September. Dr. and Mrs. Eitel sailed September 13 for Europe, where Dr. Eitel will spend a year in post-graduate study in surgery at Berne, Vienna, Berlin and Munich.

The Kansas City Annual Fall Clinical Conference is to be held this year in conjunction with the meeting of the Inter-State Post Graduate Assembly meeting at Kansas City, October 17 to 22, inclusive. Announcement has also been received of the third annual meeting of the Ensworth-Central Medical College Alumni Association, which will be held October 22 at Kansas City, at the close of the Post Graduate Assembly meeting.

CHANGES IN THE STATE DEPARTMENT OF HEALTH

Division of Venereal Diseases:—The State Board of Health is operating the Division on a tentative program to meet the cut in appropriation to $17,500 per annum. This cut necessitated discontinuance of venereal disease education work to which Miss Mildred Smith, R. N., had devoted half of her time.

The Board was obliged to discontinue the services of Dr. Davis Stern, who has had charge of the laboratory and field epidemiological work, also the services of Mrs. Catherine Olinger, who has done the follow-up work in St. Paul, and Miss Ruby Applebee in Minneapolis. The Minneapolis venereal disease ordinance went into effect July 1, 1927, and the Minneapolis Health Department is in a position to handle the follow-up of venereal disease cases there. Thus far, owing to the lack of funds, no arrangement has been effected for follow-up work in St. Paul. Dr. B. F. Simon is making every effort to continue Mrs. Olinger's services in St. Paul and Ramsey county.

The clerical staff of the Division has been reduced and if case reports on laboratory specimens are not received promptly the Board trusts that physicians will appreciate its position and understand that the delay is unavoidable.

In August, 1927, 3,633 blood specimens for Wassermann tests were received. 64 were unsatisfactory. Of the 3,569 examined 14.7% were positive. In addition, there were 89 spinal fluids and 674 smears for gonococci. To September 15th, there has been a marked increase in the number of containers requested by physicians throughout the state.

Dr. H. G. Irvine, who organized the Venereal Disease work in Minnesota and has been part time Director of the Division since its establishment by the Board, continues nominally as Director without salary.

In view of the circumstances Dr. Irvine has consented to handle certain technical matters for the Board since the Board has no physician with special training in venereal disease lines, but he is doing this at odd times in order not to take any regular time from his private practice.

Dr. Irvine's voluntary service is greatly appreciated by the Board under the circumstances, and particularly since his income from private practice would have been much larger than the salary paid by the Board for services with the Division.

Division of Child Hygiene:—Dr. Ruth E. Boynton, who joined the Division to make a survey of the midwife situation in coöperation with the State Board of Medical Examiners in 1923 and then succeeded Dr. Everett C. Hartley as Director October 16, 1923, submitted her resignation as of October 1, 1927, to accept a position at the University of Chicago in charge of the Women's Division of the Students Health Service. Dr. Boynton also will serve as Assistant Professor of Clinical Medicine in the University of Chicago Medical School.

In order to carry out the work which the Board has planned for the immediate future a knowledge of conditions throughout the state and acquaintance with individuals, medical and non-medical, interested in maternal and infant hygiene was essential. Fortunately, Dr. Everett C. Hartley understood the circumstances fully and through his interest in the Division's program acceded to the request of the Board to give half time as Director of the Division. The Board desires to complete the organization of the County Administrative Boards for Maternal and Infant Hygiene throughout the state and to assist these Boards in putting their own programs into effect on a permanent basis. Dr. Hartley's previous service makes this possible through his knowledge of conditions. Otherwise the loss of Dr. Boynton at this time would be disastrous.

Arrangements for the study of maternal deaths in Minnesota in accordance with the resolution of the House of Delegates of the State Medical Association are about completed. Statement covering this work can be made in the next issue.

Division of Sanitation:—Mr. James A. Childs, Senior Sanitary Engineer, in the service of the Board for over eighteen years, was elected unanimously by the Metropolitan Drainage Commission as Chief Sanitary Engineer and Executive Officer, salary $6,500 per year.

Mr. Childs was induced to accept a leave of absence rather than to sever his connection with the Board.

The Metropolitan Drainage Commission will probably have offices on University Ave. near the Saint Paul city limits, so contact with Mr. Childs will not be lost and his very valuable service may at times be secured.

Mr. Childs had personal supervision over the sanitary survey of summer resorts authorized by Governor Christianson and conducted between June 1 and September 1, 1927. Three hundred twenty-two resorts were investigated. Three sanitary engineers, all University men, were temporarily employed for this work. Unfortunately all resorts could not be included in the survey and no tourist camp investigations could be made. However, orders were issued regarding water supplies and disposal of sewage and other wastes and investigation was made of milk supplies of the resorts. A plan is now being worked out giving suggestions for improvement of the milk supplies during the coming season.

This very important work was financed by balance in the funds of the Division of Hotel Inspection released by the Governor's order through the Department of Administration and Finance.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

MEDICINE

SUPERVISORS:
F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE EFFECTS OF TONSILLECTOMY ON THE ACUTE ATTACK AND RECURRENCE OF RHEUMATIC FEVER. Wm. H. Robey and Louis M. Freedman (Medical Clinics of North America, March, 1927). The authors believe that complete enucleation of tonsils offers the best preventive of rheumatic fever and rheumatic heart disease, and the repeated history of sore throats is of more importance in deciding upon enucleation than the appearance of the tonsils themselves. Conspicuously diseased tonsils, by examination, should be enucleated in the absence of history of sore throat.

The outstanding point in the paper by these authors is their encouragement to resort to tonsillectomy in patients with acute rheumatic fever, if the disease has a tendency to assume a protracted course. This is done in the face of active fever and joint symptoms. They have noted a prompt subsidence in fever and joint symptoms when tonsillectomy has been performed in these cases.

F. J. Hirschboeck, M.D.

SURGERY

SUPERVISORS:
DONALD K. BACON,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

CONGENITAL LUXATION OF THE KNEE. H. W. Spiers (Jour. of Bone and Joint Surgery. 1927, 9, 469-475). The author reports four cases of congenital luxation of the knee. This condition is uncommon but can hardly be classed as a rarity. Mayer in 1912 noted sixty cases in the literature.

The ultimate causal factors are unknown. Unusual presentations at delivery seem to be the rule. The sex seems not to be a factor of importance, differing in this particular from congenital hip dislocations, which predominate in the female.

The upper end of the tibia, and with it the fibula, slips forward, upward and laterally, and the lower end of the femur appears posteriorly and mesially in the popliteal space, where it can be felt and outlined very definitely. The position of the lower leg, the anterior folds of skin, abnormal hyperextension and loss of flexion, with the lower end of the femur displaced, make the diagnosis quite certain even without *x*-rays.

Harold E. Simon, M.D.

THE RATIONAL TREATMENT OF TUBAL DISEASE: C. Jeff Miller (Surg., Gyn. and Obst., July, 1927, 45, 110-114). Miller studied a group of 600 recent cases of tubal disease and found the criteria upon which delayed operation is based disregarded in 381. He answers the arguments for immediate operation by the results in this group.

Miller found 82 cases with postoperative complications, 59 of these in cases operated upon early, or "improperly cooled." There was less febrile reaction in those with delayed operation and their postoperative hospital stay was shorter. There were 18 deaths in the 600 cases, 16 in the group of 381 uncooled (4.2%), and 2 in the 219 "cooled" (1%). In a series of 1,083 cases treated expectantly (Holtz), 12 per cent of pregnancies ensued, there were 82 per cent cures, and only 2 per cent were entirely unrelieved. Technical difficulties are not as great in the deferred operation. The only argument admitted in favor of immediate operation is that frequently social or financial conditions will not permit the necessary period of rest.

The deferred operation is favored because of three points: (1) salpingitis is an infectious disease, with the gonococcus responsible for most cases, and autosterilization occurs in at least 70 per cent; (2) spontaneous clinical recovery may ensue in any type, especially the milder; and (3) involvement of the peritoneal cavity, or death during an acute attack, is unusual. Deferred operation carries no additional risk.

The cardinal point in Miller's routine treatment is absolute rest in bed during the acute attack, and until the temperature has been normal for ten days. Bimanual examinations check the course of the disease, with attention to temperature fluctuation afterward, and regular white counts. He gives ice caps and opiates for pain, gently given enemata or mild laxatives; not drastic cathartics. Hot vaginal douches may add to the comfort. Fluids are forced. With this treatment he expects 15 per cent permanent spontaneous cures. In 10 per cent, operation is indicated as soon as the acute attack subsides. Radical surgery frequently is indicated because of unwise management.

The extent of surgery depends upon the pathology, the age, and social condition of the patient. Usually in

tuberculous or specific infection both tubes must be removed. Hysterectomy should be done only when the uterus is directly implicated. Oöphorectomy is indicated when the ovary is directly involved, is riddled with cysts, or when its blood supply has been damaged. Removal of the primary focus may relieve the ovary of an acquired inflammation.

Splitting or drainage of the tube, or partial salpingectomy are opposed.

JOHN H. BOWLES, M.D.

THE MECHANICS OF THE PATELLA: J. Clark Moloney (Jour. Bone and Joint Surgery, 1927, 9, 476-481). The patella may be congenitally absent and associated with remote grotesque deformities and marked impairment in the function of the knee joint. Sometimes the patellar absence is hereditary, traced occasionally as a sex-linked character associated frequently with absent thumb nails, and marked by no demonstrable impairment in joint function. The fact that athletes, soldiers, mountain climbers have belonged to this latter group has led some observers to question the patella's mechanical worth.

It has been argued that the patella, perhaps, adds nothing to the mechanical efficiency of the joint, since the giant kangaroo, which would be more in need of a patella than man, has none.

The author concludes from a careful study of the geometrics involved that the patella adds considerable to the efficiency of the knee joint by increasing the distance between the axis of rotation of the tibia and the line of direction of the force that pulls on the tibial tubercle by means of the patellar ligament, thereby decreasing the magnitude of the force factor in the product that gives the moment of force, sufficient to rotate the tibia.

HAROLD E. SIMON, M.D.

BOOK REVIEW

THE CLINICAL INTERPRETATION OF BLOOD CHEMISTRY. Robert Kilduffe. 186 pages. $2.50. Philadelphia: Lee and Febiger, 1927.

Ever since blood chemistry has been moved from the experimental field and made a diagnostic procedure the medical world has needed just such a book as this. Various articles in modern medical books and current medical literature have been available on the subject but each seeker for information has hunted through a mass of complicated technic, comparison of methods and diversity of opinion, for a few facts. In this small volume of about 186 pages Dr. Kilduffe has presented only the bare essentials of the subject. Although he, himself, is a laboratory man he omits all technic but, for each subject, gives a discussion of the clinical interpretation, the normal values, the significance of both increased and decreased amounts, and a complete bibliography for those who wish further details.

At the end is given the dietetic management of metabolic conditions, management of diabetic patients and use of insulin; with charts and tables of food values, normal heights and weights, maintenance diets and methods of calculating diabetic diets. The internist may have this subject so well in hand that he will find little of interest in the book but to hundreds of other medical men it will offer a welcome helping hand. To the general practitioner, to the busy specialist, to the older man trying to keep abreast of the bewildering advances in medicine, to the recent graduate who is as yet somewhat confused by the bulk of knowledge just acquired, this little book will give the largest amount of concise information in the smallest amount of space or time. It should be available to anyone who is engaged in any branch of the practice of medicine.

MARGARET WARWICK, M.D.

WANTED—Locum tenens work. Illinois M.D.; internship Aucker Hospital, Saint, Paul, age 26, single, Minnesota license. Available on short notice. Address C-144, care MINNESOTA MEDICINE.

PHYSICIAN'S OFFICE FOR RENT—Established three years in connection with dentist's office. Inquire at drug store, 1340 Thomas Street, corner Hamline, Saint Paul.

GENERAL PRACTICE FOR SALE—In western Minnesota. Population of town 1,600. Good roads. Good community. Complete office equipment including *x*-ray and physiotherapy. Good price will be made. Address C-143, care MINNESOTA MEDICINE.

WANTED—Internist to become associated with group of physicians. Clinical and *X*-ray laboratory. Rent on percentage of income. Address C-145, care MINNESOTA MEDICINE.

PHYSICIAN'S OFFICE FOR RENT—Corner 50th Street and Bryant Avenue South, Minneapolis. Call Locust 7823.

FOR RENT—Eight room office. $85.00. Can be arranged as dwelling and office. 3805 Nicollet Avenue, Drs. Bessesen.

WANTED—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

DOCTOR'S and DENTIST'S OFFICE for rent. 301 Donaldson Building, Minneapolis.

Minnesota State Medical Association

FIFTY-NINTH ANNUAL MEETING

June 30, July 1 and 2, 1927

DULUTH, MINNESOTA

PROCEEDINGS OF THE HOUSE OF DELEGATES. FIRST MEETING—THURSDAY MORNING, JUNE 30, 1927

The meeting of the House of Delegates in connection with the Fifty-ninth Annual Session of the Minnesota State Medical Association, June 30 to July 2, 1927, held in the Duluth Hotel, Duluth, Minnesota, convened at eighty thirty-five o'clock, Dr. W. F. Braasch, President, presiding.

PRESIDENT BRAASCH: This house is so orderly and harmonious that we don't even need a gavel, so we will proceed without any apparently.

May I call attention to the fact that the Committee on Credentials has been appointed and consists of Dr. Hunt, Dr. Stewart, and Dr. Schuldt; and I believe they are officiating now. Later on we will get a report from them, but at the present time we will proceed with the other items of business.

We have as guests of our Society this year, Dr. R. R. Ferguson, of Chicago; Dr. H. M. Stang, representing the State Medical Society of Wisconsin; the delegate from the Dental Association, Dr. W. J. Hartung; the delegate from the Druggist Association, Mr. H. Martin Johnson. Are any of these gentlemen present? If so, will they kindly arise?

They will be in a little later and we will extend our official greeting at that time.

It has always been understood that no one could be present at a meeting of the House of Delegates unless he was a member of this Association or an invited guest.

We will next proceed with the reading of the minutes of the last session. It will be in order, therefore, to accept the minutes of the last session as transcribed by the official reporter and published in main in MINNESOTA MEDICINE, October, 1927. A motion to accept these officially is in order.

DR. E. R. HARE (Minneapolis): I so move.

The motion was seconded.

PRESIDENT BRAASCH: Are there any remarks or corrections?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: We will listen to the report of the President of the Council.

Dr. H. M. Workman read the report.

REPORT OF COUNCIL

Meeting of the Council, June 30, Hotel Duluth.

Members present: Dr. H. M. Workman, Dr. W. F. Braasch, Dr. L. Sogge, Dr. W. W. Will, Dr. G. S. Wattam, Dr. F. A. Dodge, Dr. W. H. Condit, Dr. F. J. Savage, Dr. M. S. Henderson, Dr. W. A. Coventry, Dr. E. A. Meyerding.

Meeting called to order by Dr. Workman, president of the Council.

Minutes of last meeting read and approved.

Dr. Dodge, a member of the Finance Committee, discussed the proposition of the Minneapolis Trust Company in regard to a Custodianship Account for the permanent fund of the State Medical Association.

Motion was made by Dr. Savage, seconded by Dr. Sogge and carried, that the proposal of the Minneapolis Trust Company be accepted; that the Council empower the Finance Committee to instruct the treasurer to place such funds as belong to the permanent investment fund in the Minneapolis Trust Company for investment subject to the approval of the Finance Committee according to the agreement made.

A discussion was had as to the separation of the books of MINNESOTA MEDICINE and the Minnesota State Medical Association. The chairman of the Finance Committee was asked to take this up with the Editing and Publishing Committee and report at the next meeting. Dr. Wattam suggested that after consultation with the Editing and Publishing Committee the secretary bring the proper motion before the council covering the item of separate books.

The Council recommends that the following changes be made in the constitution and by-laws:

Constitution—Article IV, Section 1. In the second line of the printed copy, after the words "Emeritus Members" and before the words "and Guests" add the words "Honorary Members." The section will then read as follows.: This association shall consist of Members, Delegates, Emeritus Members, Honorary Members and Guests.

Constitution—Article IV, after Section 4, and as Section 5 add the following: "Honorary members shall be those elected to such membership by the House of Delegates on the recommendation of the Council."

Constitution—Article IV. That section which is now section 5 relating to Guests shall be Section 6.

By-laws, Chapter I—Membership—Seetion 3. In the first line, after the word "Emeritus" insert the word "Honorary."

Constitution, Article VII, Sections and District Societies. In the fourth line of the second paragraph, after the word "sueh" and before the word "Distriets" omit the words "sparsely settled."

Constitution, Article X—Funds and Expenses. Omit the first sentenee in this Artiele which reads "Funds shall be raised by an equal per eapita assessment of members." In the seeond line after the word "The" and before the word "shall" omit the words "amount of the assessment," and insert in lieu thereof the words "Annual Dues." This article will then read as follows: "The Annual Dues shall be fixed by the House of Delegates, etc."

The Couneil reviewed the reports of the various committees and the resolutions to be presented.

The Couneil is in sympathy with the work of the Publie Health Education Committee and will assist it as far as it can next year.

A vote of thanks is to be given to all committees.

The Couneil suggests that the Committee on Contraet Praetiee be eontinued.

The Council suggests that it be authorized to appoint a Committee on University Relations; that this committee will be similar to the Medical School Committee, and that some of the members of the present committee will be retained.

The Council suggests that because of the great value of the Conferenee of Local Secretaries, that it be repeated annually.

The bill of the attorneys in regard to the Basie Seienee Bill was approved.

The matter of paying the expenses of the delegates to the A. M. A. was diseussed and the Couneil reeommends that it be deferred for another year.

A letter was read from Dr. A. J. Chesley asking that the State Assoeiation recommend members of eertain counties for appointment by the State Board of Health on the County Administrative Board of the Division of Child Hygiene, and a motion was made by Dr. Coventry, seeonded and carried, that it be left to the Councilor of the District to make the reeommendation.

The Couneil reeommends that Dr. T. C. Clark of the Soldiers Home, Minneapolis, be made an Emeritus Member—after the adoption of the Constitution.

Information has been reeeived that the Naturopaths are going to put forth an effort to test the validity of the Basic Science Bill, and a motion was made by Dr. Savage, seconded by Dr. Wattam, that if this case is brought up the State Seeretary be empowered to employ legal counsel to assist the Basie Seience Board in establishing the validity of the law. Carried.

Dr. Braaseh stated that Wisconsin is sending a delegate to this meeting of the Minnesota State Medieal Assoeiation to ereate a friendly feeling between the Assoeiations and to become familiar with the problems and work of the adjoining state. The Council suggests that the president be empowered to appoint someone to attend the meetings of our adjoining state assoeiations in the same capaeity.

Next meeting of the Council, June 30, 4 o'eloek, Parlor C.

Meeting adjourned.

Dr. H. M. Workman (Traey): I move the adoption of the report of the Council.

The motion was seeonded.

President Braasch: Before proeeeding with this adoption there are a number of items of considerable interest and eonsiderable importanee. You may desire to eonsider some of them further in more detail.

If there are any remarks, eritieisms or eorreetions to be made, I wish you would feel at liberty to make them.

Dr. F. A. Dodge (Le Sueur): The report of the Council was the twenty-ninth instead of the thirtieth.

President Braasch: I wish to call attention to some of the points. One is the matter of paying the expenses of delegates to the A. M. A. discussed by the Couneil. The Couneil reeommends that it be deferred for another year for the reason that the meeting is in Minneapolis next year and of eourse it will entail no expense so there is no immediate necessity for solving this problem. We might, however, open this matter for diseussion and be sure that the Council will be glad to get the eounsel and adviee of any of you, and have any opinion on this subjeet.

Some members believe that the members of the House of Delegates of the A. M. A. should have all expenses paid. Some believe that only a part of the expenses should be paid, and others believe that no expenses should be paid. Dr. Meyerding made a survey of the problem some time ago and he found that the reaetion from the various states was variable. It might possibly interest you to know what it was. Will you read it?

Secretary Meyerding: The number of states that will pay all the expenses of their delegates, three; those who pay traveling expenses only, one; those who pay nothing, nineteen; those who pay the expense of the seeretary, two; those who pay a speeifie amount, eight; those who pay railroad and Pullman, three; those who do not pay, one; a total of forty-two.

President Braasch: In other words, of the entire number of states only twenty paid something and only a small pereentage paid all the expenses.

I think Dr. Litzenberg would like to tell us his opinion on the subject.

Dr. J. C. Litzenberg (Minneapolis): Mr. President, Members of the House of Delegates: My term of service as delegate expires with this meeting and therefore I can speak my mind.

I don't believe a state assoeiation like this has the right to ask the delegates to spend the amount of money that is neeessary for them to be delegates to the A. M. A. over a period of years. The first four years, that is, two terms, of sitting in the House of Delegates of the A. M. A. are simply learning years. You will remember when I made my report last year I said my first year in the House I sat bewildered beeause I eould see how the wires were being pulled but

I couldn't find out who had hold of the other end of them. I don't mean by that that there is any underhanded political wire pulling, but nevertheless in a body like that it is necessary that men of influence run the House of Delegates (if you will permit me to use that term) and it is all right that they should. But a man has to be in that House a long time before he can even find out where the wires go.

I made up my mind that my mission as a delegate there was to come back to this Society and tell this Society that if they wanted to have a member in that House who would have any influence they would have to keep him there for ten or twenty years. I have been in the House four years and the only men who have any influence are the men who have been there a long, long time.

I know one man who has been there twenty-two years, another man eighteen years, and several men eight, ten and fifteen years, and they are the men who have influence.

Every state should pick out its best men for delegates. I can speak my mind because I am retiring this year and refusing election, and I am doing it for the purpose of trying to get the state of Minnesota into the real councils of the American Medical Association. But there is another reason, and that is for the benefit of the American Medical Association, a delegate should not be selected from a floor of a House because a friend gets up and says, "I move that Dr. Jones be made a delegate." The motion is seconded, the secretary is instructed to cast the ballot, the secretary casts the ballot, and you have a delegate.

That is the way I was elected. My friend here nominated me. My enemies didn't want to oppose me in public and I was elected. I wasn't selected. I felt the compliment of being nominated by my good friend here who has been on the Council and interested in the Association, but I didn't feel I was properly selected just the same.

There ought to be a different method of selecting these American Medical Association delegates. The Council, or a committee of the Council, should canvass all the men of this state and pick out a man who can go there and have some influence, a man who can sit in the councils of the A. M. A. and have influence and have something to say. If he can be there long enough so that he has some influence it is all right.

We are all willing to go to the House of Delegates and pay our expenses. It costs about $200 a year, and sometimes more.

Because I am retiring I want to urge this, and there are a good many states—and they are increasing in number—that are paying the expenses. First, we want delegates there who have influence. In order to have influence they must be there over a long period of time. And if they are going to be there a long period of time, this Association should not ask them to pay their expenses. (Applause.)

Dr. F. J. Savage (St. Paul): In the By-laws adopted last year, section 11, chapter 8, there appears this clause: "The Council shall nominate and present to the House of Delegates a list of nominations for delegates to the American Medical Association to be voted upon by the House of Delegates. Additional nominations may be made from the floor of the House."

Dr. J. C. Litzenberg (Minneapolis): I don't think it is wise for the House of Delegates to say they will pay all the expenses of the delegates. I think the necessary expenses of being a delegate, railroad fare and hotel bill, are quite enough. But to let a man bring in an expense account like a traveling man, padded for his hip, all that, of course, we don't want. In other words, there ought to be a limited amount or else a stated amount each year. If one year the meeting is in California, and the next year it is in Minneapolis, the difference is made up. I feel sure the House of Delegates shouldn't pay all the expenses, but it should pay the expense of going there year after year, railroad and hotel.

Dr. F. A. Dodge (Le Sueur): I want to second what Dr. Litzenberg said. Although it won't make much difference this year because the A. M. A. is going to meet in Minneapolis, in order to have it the following year I imagine it would have to come in a By-law and have to be proposed at this session. In order to have that in effect next year it seems to me when the time for new business comes up that ought to be put in this year.

President Braasch: The Council will, of course, act on this matter as the Finance Committee of the House of Delegates, but we shall certainly welcome the advice and opinion of the House of Delegates and act accordingly. If any other member would care to express his opinion I am sure the House will be glad to hear from him on this subject.

Dr. H. M. Workman (Tracy): About this expense, there is one thing the Council wants to call your attention to and that is that Dr. Litzenberg says it will cost in the neighborhood of $200. If you have three delegates there goes $600. As the expenses are increasing all the time, the Council feels we must cut down some place pretty soon. It is a question whether we can afford to add this $600 and we would like to know from this House of Delegates whether they want the Council to do it or not.

President Braasch: Are there any further remarks on the subject?

If not, we will proceed to the consideration of some of the other items.

One that interested me very much was the fact that Wisconsin is sending a delegate to this meeting to show their friendly feeling toward us, to begin with, but primarily so they can get in touch with anything we are doing and help solve their own problems possibly. It seems to me, and it appeals to the whole Council, that we could well adopt the idea and have some representative from our meeting attend the meetings of the neighboring state associations, all of which are progressive, and we could unquestionably pick up something worth while and also bind us a little closer to them in the future.

It seems to me the suggestion was a good one. This report of the Council would empower me to appoint

a representative to attend the meetings of our adjoining state associations in a similar capacity.

Are there any objections or any remarks on this item?

You will also note this point: Information has been received that the Naturopaths are planning to attack the Basic Science Law. Motion was made by Dr. Savage and seconded that if this case is brought up the Association Secretary be empowered to employ legal counsel to assist the basic science board in establishing the validity of the law. That may carry with it some expense, possibly considerable expense, but you can all certainly see the logic of supporting this Science Bill that cost us so much time and effort to put across. It would be very short-sighted business unless we backed it up. I am sure you will all agree on that point.

The Council also suggests because of the great value of the conference of county society secretaries that it be repeated annually. This, of course, meant that the traveling expenses of the county secretaries would be refunded to them. I think the conference of the county secretaries was one of the high lights of the present year. If there is anybody who deserves recognition it is the county secretary. He is the important cog in our whole organization, and if he is a good county secretary the whole state will get credit for it and our state organization is that much stronger. If he is a poor one, we will all suffer.

It seems to me that recognizing the local secretary is a very important step in advance, and I know they got a great deal out of it. They got in touch with the things that were going on and carried back reports of the various activities of our association to the local societies. The Council felt that this conference should be repeated annually, even though it would cost us some money. It cost $265 last year. No graft there.

Are there any suggestions or additions along this line that any of you would care to make?

You will also notice that there is reference made to the Committee on University Relations asking that a new permanent committee be appointed similar to the present Medical School Committee. Some of the members of the present committee will be retained in it.

Although it is hardly within the province of the state association to interfere with the details of the management of the Medical School, nevertheless we should familiarize ourselves with the administration of the school and possibly act in an advisory capacity. However, we should step rather warily and cautiously in this matter, and I am quite certain that such a committee will do so in the future.

We will hear more from this subject when we come to consider the report of the University Committee by Dr. Kennedy, the secretary.

Are there any further questions to be asked on this Council Committee report before I submit it to vote?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: The next item of business will be the adoption, rejection or amendment of the various reports. This year we have expedited matters considerably by having the reports of the various committees printed and sent to every member of the House of Delegates two weeks before the meeting and you have had an opportunity to go over them. You doubtless are familiar with the contents of all the committee reports so it will be quite unnecessary to read them. In this way we will be able to save much time and effort. I will, therefore, not call upon the various officers and committee men to read these reports but I will ask them to make any comments they care to and also any changes or alterations. The subject of the report is also up for your consideration, for criticism or commendation as you may see fit.

There is another thing, too. A new method of conducting business has been adopted this year. A committee has been appointed to whom all resolutions will be referred, which I am sure will expedite matters.

We will now consider the report of the Secretary.

REPORT OF THE SECRETARY

Active membership of this Association, June 15, 1927, was 1,985. This is an increase of 66 members over the same date last year. The State Secretary wishes at this time to thank the secretaries of the component Societies, upon whom falls the real work of the Association, and to whom should go the large share of the credit for successes of the Association for the year.

Although the dues this year were increased, they came in more rapidly than ever before in the history of the Association. The Minnesota State Medical Association ranks high in the American Medical Association for the prompt collection of dues.

Following is a list of the membership by Societies.

	Members
Blue Earth County Medical Society	31
Blue Earth Valley	22
Camp Release District	47
Central Minnesota District	18
Chisago-Pine County	16
Clay-Becker County	18
Dodge County	8
Freeborn County	20
Goodhue County	15
Hennepin County	467
Houston-Fillmore County	22
Kandiyohi-Swift County	14
Lyon-Lincoln County	19
McLeod County	15
Meeker County	10
Mower County	23
Nicollet-LeSueur County	16
Olmsted County	263
Park Region District and County	40
Ramsey County	317
Red River Valley	56
Redwood-Brown County	25
Rice County	24
St. Louis County	181
Scott-Carver County	20
Southwestern Minnesota	51
Stearns-Benton County	42

Steele County		13
Upper Mississippi	One deceased	68
Wabasha County		12
Waseca County		9
Washington County		14
Watonwan County		6
West Central Minnesota		25
Winona County	One deceased	22
Wright County		16

On December 31, 1926, the total membership numbered 2,014. This year it will, no doubt, exceed that number greatly. The Secretary, through the local secretaries of the various county medical societies, attempts each year to get a check upon the ethical practising physicians in Minnesota who are not members of their county and state Association. These are the men we must work on. It is our aim to have every ethical practicing physician in the State of Minnesota a member of our Association.

SECRETARIES' CONFERENCE

A Conference of the Secretaries of Component Medical Societies was held at the Saint Francis Hotel, February 8, 1927. This conference was held in conjunction with the Legislative Committee and nearly every local society was represented. Problems peculiar to their office were discussed by those in attendance. All who attended this meeting believe it was of great value and that it should be repeated in future years.

PUBLICITY CHAIRMEN'S CONFERENCE

A Conference of the Publicity Chairmen of local societies was held at the Saint Francis Hotel, March 17 in conjunction with the Legislative Committee. This conference was called by Dr. George Earl, Chairman of the Public Health Education Committee. The Public Health Education Committee are planning an extensive program and are carrying their activities to all local societies.

PASSAGE OF THE BASIC SCIENCE BILL

The outstanding feature of the work of the Association for the past year was the passage of the Basic Science Bill and the Medical Practice Act. This was made possible by the coöperation of the entire medical profession in the state; by the prompt collection of dues by the local secretaries; by the very able chairman of the Legislative Committee, Dr. H. M. Johnson, and by his fellow committeemen; and by the coöperation of the officers and councilmen of the State Association. The Basic Science Bill and the Medical Practice Act did not constitute the entire work of the Legislative Committee. It was necessary that someone be present at every session of the Legislature in order to see that action was promptly taken against Bills which were introduced which would defeat the purpose of the Basic Science Act. You are all more or less familiar with the Naturopath Bill—a bill which would have made the Basic Science Bill practically worthless. The Committee worked very hard to prevent the passage of this Bill. Legislation of this sort makes it imperative that this Association have a full time man at every session of the Legislature.

COMMITTEES

The Council and the Committees have given an unusual amount of their time to the work of the Association. Everyone knows of the enormous amount of time that the Legislative Committee has given during the past year and more. There have been numerous meetings of the Program Committee with the resulting excellent program. The Chairman of the Public Health Education Committee has traveled throughout the State visiting societies and groups of physicians. The excellent reports which will be presented here by the other Committees speak for their endeavors. The State Secretary has attended on an average three committee meetings a week since the first of the year. The interest of the members of the Committees may be used as a criterion of the interest of the membership.

UNETHICAL PRACTICE

This office is in receipt of many letters concerning unethical practice, the privileges of the cults, etc. We have given the inquirers such information as we have available, or we have referred these matters to the proper Boards. Unfortunately, this office is not in a position to dispose of these matters, but must refer them to other Boards, such as the Board of Medical Examiners, etc. Many items are also referred to our Legal Advisors. This service, if continued, will entail great expense, especially that of obtaining legal opinions.

COMPONENT SOCIETIES

The interest shown by the local societies is a source of great encouragement to the State officers, as the strength of the State Association depends upon its component units.

LOCAL SOCIETIES VISITED

During the past year your secretary has attended meetings or visited members of the following societies:

Rice County Medical Society
Goodhue County Medical Society
Mower County Medical Society
Freeborn County Medical Society
Waseca County Medical Society
Steele County Medical Society
Redwood-Brown County Medical Society
Camp Release District Medical Society
Chisago-Pine County Medical Society
Blue Earth County Medical Society
Nicollet-LeSueur County Medical Society
Scott-Carver County Medical Society
Winona County Medical Society
Houston-Fillmore County Medical Society
Olmsted County Medical Society
Upper Mississippi Medical Society
Red River Valley Medical Society
Clay-Becker County Medical Society
Park Region District and County Medical Society
McLeod County Medical Society
Blue Earth Valley Medical Society
Southwestern Minnesota Medical Society
West Central Minnesota Medical Society
Lyon-Lincoln County Medical Society
Saint Louis County Medical Society

Stearns-Benton County Medical Society
Kandiyohi-Swift County Medical Society
And others.

PERIODIC MEDICAL EXAMINATIONS

Through the State Secretaries' Conference in Chicago and by personal interview with Dr. Dodson of the American Medical Association, Minnesota is urged to make a more careful study and to further the interests of its members in periodic medical examinations. The American Medical Association is of the firm belief that periodic medical examinations are and will be a very important part of the practice of medicine.

STATE FAIR BOARD MAKES HEALTH BUILDING IMPOSSIBLE

A short time ago it was called to the attention of those interested in Public Health work that the State Fair Board for economic reasons had decided to do away with the Public Health Building at the State Fair. Believing that it was necessary to have healthy farmers in order to have healthy stock and crops, a committee appeared before the Board and presented the cause of Public Health. It was very well received and the Secretary of the Board was instructed to make such arrangements as he could to place this work back on its former basis. However, the State Secretary is in receipt of a communication for the Secretary of the State Fair Board making a proposition which it is absolutely impossible to accept, because it would place such a heavy financial burden on the Health organizations. It is interesting to note that the appropriation to the Art Department has not been cut. Is this a reflecion of the attitude of the members of the State Fair Board on the Question of public health?

RETROACTIVE MEDICAL DEFENSE

Retroactive medical defense goes out of effect June 27, 1927. This is in conformity with the action of the House of Delegates at their meeting in 1925. This means that after June 27, 1927, the State Association has no medical defense whatsoever. Following is the attorneys' report for the past year.

Hunt v. Reihs.—Hunt and Hunt of Fairmont commenced action through attorney Leo Seifert of Fairmont in 1924 for professional services rendered. Venue of action was changed from Martin County to Watonwan County. Defendant answered alleging malpractice and asking damages in the sum of $1,000.00. The action is still pending.

Schoenbachler v. Anderson.—Dr. R. E. Anderson of Willmar. Action commenced in County of Kandiyohi in October, 1925. Alleged negligence in lancing boil or abscess, thereby causing permanent injury; $20,000.00 damages sought. Action still pending but has never been placed upon the calendar for trial by the plaintiff.

Anderson v. Ulrich.—Dr. Henry L. Ulrich of Minneapolis. Action brought in District Court of Hennepin County in 1923. Claim of malpractice in the application of protein tests. Damages alleged, $22,000.00. This case has been called for trial and continued at the request of plaintiff two or three times. It was last called for trial last September, and, plaintiff not being ready to go on, the case was stricken from the calendar. The action is still pending, but has never been replaced on the calendar by the plaintiff.

Gray v. Griger.—Action brought by Dr. F. D. Gray of Marshall, Minnesota, through attorney W. E. Kempton, against George Griger, on account of services rendered on behalf of Mrs. Griger, now deceased. Action in County of Redwood, venue changed to Yellow Medicine County. Counterclaim interposed by defendant against Dr. Gray for $7,500.00 damages, on account of alleged death by wrongful act. Action originally commenced March, 1926; passed over last term of court; still pending; might be called for trial this June term of court.

Hodge v. Hanson.—Dr. Harlow J. Hanson of Richfield, Hennepin County, Minnesota. Action by Charles M. Hodge for malpractice in failing to find dislocated semilunar bone, right hand; damages asked, $11,129.75. Action commenced in Hennepin County, May, 1926. This action was settled June 7, 1927, for the sum of $635.00 immediately before the trial.

Halter v. Browning.—Dr. Wm. E. Browning, Caledonia, Minnesota. Action brought by Mrs. Dora Halter in County of Houston, in December, 1926. Malpractice claimed in the matter of setting fracture of right leg and ankle, resulting in subsequent amputation. This case is probably barred by the Statute of Limitations.

DeGree v. Norrgard.—Dr. Henry T. Norrgard of Milaca. Action brought by Robert DeGree, as father and natural guardian of Harold DeGree, a minor, in County of Mille Lacs, for alleged malpractice in treating fractured right humerus; damages asked, $25,000.00. Action commenced in February, 1927. Case pending; no notice of trial yet received. Action probably barred by Statute of Limitations.

Your Secretary wishes to thank the many physicians of the state whom he has met and with whom he has corresponded in the last year for their friendliness, helpfulness and backing. He wishes to thank the officers of the Association, members of the Council and each committee for their splendid work and coöperation. He wishes to thank the secretaries of the various component county societies for their coöperation. He wishes especially to thank the president of the Association, Dr. W. F. Braasch, for his very kind coöperation and support. The success of the Association is due those mentioned above.

E. A. MEYERDING, M.D., Secretary.

Dr Meyerding, your report has already been printed and read by all of us. If you have any changes or additions to make we will be glad to hear from you.

SECRETARY MEYERDING: We have an addition that would have been included if received in time.

The Basic Science Board is now in operation. There will be a fee of three dollars. You will receive some time during the year a notice from them. There is a form that has to be made out, of which this is not a true sample because there were some technical errors in them and they have to have them reprinted and consult with the Attorney General.

I will go over this hurriedly and give you an idea of what you have to fill in.

Secretary Meyerding outlined the "Application for Certificate of Registration in the Basic Sciences, under an Act to Define the Term Basic Sciences, Practicing Healing and Practice of Healing, as used herein, etc., being Chapter 149, Session Laws of Minnesota for the year 1927."

President Braasch: You have read the Secretary's report. Are there any further suggestions to be made, additions or corrections?

Dr. S. F. Adams (Rochester): Some of us old timers may have lost our licenses. Where do we get the number?

Secretary Meyerding: The State Board of Medical Examiners must have it. You file it with your county clerk of courts. He would have it too.

We will get out a bulletin some time before this material is sent giving you what inside information we have and some directions to tell you what to do. We want to have this Basic Science information known in time and we intend to supplement this communication by another one to help you in this matter.

President Braasch: I think one of the activities of the Secretary's office meets with our approval, although it costs some money, and that is the numerous bulletins which have been issued and which certainly should have kept us informed of every activity going on in the Society. I don't know what the reaction is among the House of Delegates, but I believe you are in favor of this activity and are in favor of continuing it. If there are any objections or criticisms along this line feel free and frank to express your opinion.

Dr. C. B. Drake (St. Paul): I just want to suggest that Minnesota Medicine comes out every month and I hope it is read more or less by the members. It would be very possible to have these bulletins, in part, put in Minnesota Medicine and perhaps save expense along the line the Secretary's office has been working this last year. I don't know how expensive it is to put out bulletins, but it isn't very expensive to have a Secretary's sheet in Minnesota Medicine.

President Braasch: We will welcome any further suggestions along this line.

If there is nothing further to be added, there is one item that was overlooked and that is that we did not get the report of the Finance Committee of the Council. Dr. Dodge is Chairman of the Finance Committee, and we will call for it later.

We will next consider the Treasurer's report. I don't believe that was published.

Dr. E. R. Hare presented the Treasurer's report.

RECEIPTS

BALANCE ON HAND DECEMBER 31, 1925	
Minnesota Transfer State Bank	$ 5,097.08
Merchants National Bank	3.57
Bonds and Mortgages	11,700.00
Minnesota Medicine—	
Advertising	9,429.95
Subscriptions	4,408.62
Membership dues	10,741.00
Assessment	2,980.00
Interest—Investments	629.00
Bank balances	188.36
Bank transfers	2,300.52
General	128.93
Less checks outstanding 12/31/1926	1,594.74
	$49,201.77

DISBURSEMENTS

Minnesota Medicine	$12,857.11
Legal expense	1,370.72
Annual meeting	1,127.98
Salaries	3,099.88
Bank transfers	2,300.52
Legislative expense	70.35
Publicity and educational	5,035.12
Council	81.28
Membership dues Minnesota Medicine	4,028.00
General	1,178.05
Balance on hand December 31, 1926	
Minneapolis Trust Co.	7,971.50
Minnesota Transfer State Bank	60.10
Bonds and Mortgages	9,000.00
Less checks outstanding 12/31/1925	1,021.16
	$49,201.77

Respectfully submitted,
Earle R. Hare, M.D.,
Treasurer.

President Braasch: You have heard the report of our Treasurer, Dr. Hare. Are there any questions to be asked or any criticisms to be made?

I dare say it is very difficult for you to follow all the details of these financial transactions. The Council reviewed them, however. I believe it is customary to have an Auditing Committee go over this matter, and if you care to make any criticisms or suggestions we would welcome them now. A motion to adopt this report is in order, and you may include in this motion, if you will, that an Auditing Committee be appointed.

Dr. F. J. Savage (St. Paul): I move it be accepted.

The motion was seconded.

President Braasch: Are there any further suggestions to be made, criticisms or questions?

Dr. E. R. Hare (Minneapolis): I would suggest that it be adopted, not accepted. A motion is accepted.

President Braasch: As far as the explanation of some of the facts and figures are concerned, you might be interested to know that in going over the matter we found they have a permanent fund of something over $12,000 which will be given over to the Minneapolis Trust Company for investment, and we hope to build up this permanent fund to larger figures and make it of some practical use some time in the future. Just how we do not know. Our views are still visionary, but at the same time I am sure we can use it to some practical benefit some time in the future.

The motion was put to a vote and carried.

President Braasch: We will now listen to the report of the Committee on Credentials, Dr. Hunt.

Dr. Hunt: May I ask, first, whether any delegates got by the guard at the door without handing in their credentials?

Of a list of sixty-two delegates who are eligible to this meeting there are forty-eight who have satisfied the Credentials Committee either by their regular credentials or by checking off the list, forty-eight out of sixty-two.

President Braasch: It seems to me this is a very creditable showing and this Association ought to be congratulated on the interest shown.

You have heard this report. A motion to accept it is in order.

Dr. E. R. Hare (Minneapolis): I move its adoption, Mr. President.

The motion was seconded, was put to a vote and carried.

Dr. E. R. Hare (Minneapolis): I now move that the House of Delegates ratify and confirm all action having been taken preceding the adoption of the report of the Resolutions Committee.

The motion was seconded.

President Braasch: Are there any remarks?

The motion was put to a vote and carried.

President Braasch: We will next go on to a consideration of the report of the Editing and Publishing Committee. This report has already been printed and you are probably familiar with it but I will be glad to call upon any representative of this Committee to make any remarks, any additions or any corrections they care to make.

Dr. J. T. Christison presented the report of the Editing and Publishing Committee.

REPORT OF THE EDITING AND PUBLISHING COMMITTEE MINNESOTA MEDICINE

Minnesota Medicine entered the tenth year of its existence with the January, 1927, issue and thus far shows a promising record for the year.

Thirteen issues of the journal have been published since the May, 1926, meeting of the Association. To give a better comparison with last year's report, however, the present report will cover but twelve issues, from May, 1926, to May, 1927.

During this twelve months period the monthly issues have totalled 1,222 pages, giving an average of 101.8 pages per issue. Of this total, 758 pages were devoted to reading matter and 464 to advertising. The number of original articles and case reports, 115 in all, while numbering less than those published last year, show an increase in the number of pages devoted to each article. An average of 25 illustrations per issue, 299 in all, has been maintained throughout the year.

The total number of 2,750 copies of Minnesota Medicine published each month is distributed approximately as follows:

Members (1927 dues paid)	1,953
" (1927 dues unpaid)	147
Outside paid subscriptions	400
Miscellaneous (advertising, free and filing copies)	250
	2,750

No attempt has been made to include the financial statement for a year concerning Minnesota Medicine in this report inasmuch as an audit of the records was made last December and it was felt that a report of the finances covering the period from meeting to meeting would be confusing as no true comparison could be made between the two reports.

The records so far this year show the financial status of Minnesota Medicine to be encouraging. For the four months' period from January, 1927, through April, 1927, the total gross display advertising executed amounts to $3,176.50. The total income for the four months amounts to $4,908.35. This includes advertising, member and non-member subscriptions and miscellaneous accounts. The total expenditure for the four months amounts to $4,046.55, leaving a net gain for that period of $861.80.

Respectfully submitted,
R. E. Farr, M.D.,
Chairman.

President Braasch: Gentlemen, you have heard this report. A motion for its adoption will be in order.

Dr. W. A. Coventry (Duluth): I move this report be adopted.

The motion was seconded and carried.

President Braasch: It seems to me that this Committee should be congratulated upon the excellent results they have achieved. I think our Journal stands unique in that it is a financial success, and it certainly attests to the ability of the Editing and Publishing Committee.

Furthermore the Journal is recognized as one of the best scientific journals in the country and that is largely due to the excellent editorial ability of our worthy editor, Dr. Drake. There has been, however, and I dare say you have been more or less familiar with it, some desire expressed by various members of the Association that the Journal could take up more and more—and I am sure it will in the future—actively a consideration of matters of economic interest, of general interest, to the members of this Association. I have heard the expression by a number of members in various parts of the state that they would probably be even more interested in Minnesota Medicine than they are today if this were carried on. I am sure, however, that such action will receive more serious consideration by this Committee in the future.

Are there any further remarks or suggestions to be made along this line?

Dr. W. A. Jones (Minneapolis): I want to suggest something. I don't know whether it will go down or not, but I am very much disconcerted about the fact that very few men read their medical journals, and if there is any way of devising some means of stirring the mentality of the profession of Minnesota it ought to be done. It is really appalling, I think, when you come to consider it, how very few men look at their journals. They pile them up in a pile and that is all. I went into a doctor's office in the country some time ago and found an entire year's subscription to the A. M. A. Journal unopened. He hadn't even looked at them and naturally the other journals lacked consideration just as much.

What can we do to make this MINNESOTA MEDICINE more interesting so it will attract attention? The state Journal ought to be something the men will be glad to open and glad to read.

I don't know what Dr. Drake's experience is, but it is the experience of all publishers of medical journals that many of them are just thought of as common, everyday printing. They don't stop to consider anything they contain; they don't look at the news items except occasionally. If their name is going to be in print they will look that up carefully I am sure.

But what else is there to do? Dr. Christison has had a great deal to do with this matter and he might be able to offer a suggestion that would stimulate the interest of the readers of the medical journals.

PRESIDENT BRAASCH: Dr. Christison, have you anything to offer along this line?

DR. J. T. CHRISTISON (St. Paul): I don't think I have, Mr. President. I think in a very large measure what Dr. Jones says is true, and why that should be true I am quite at a loss to understand. I doubt not that Dr. Jones is attempting, just as we are attempting, to make his journal so interesting and so worth while that the members will read it. There is always a lot of good material if the men will only take the trouble to look for it, and in doing that all they have to do is open the journal and read the title page to find out what is there. I know very well from the material that goes into MINNESOTA MEDICINE there is nothing published that the Editing and Publishing Committee considers is not really and truly worth while.

Of course we do get occasional backhanded compliments because of some things we will not publish, but so far as the Committee is able it uses its best judgment and endeavors, as far as possible, to put material in MINNESOTA MEDICINE that every member of this Association ought to read.

PRESIDENT BRAASCH: I am sure the interest in matters of economic information to the profession are being considered much more than they were ten years ago. It is quite remarkable how these subjects are engaging the popular interest among medical men more and more and I believe matters of this type are read a good deal more than they formerly were, and I am quite certain the more the medical Journals would develop along this field the more they will be read. I can't imagine anything more interesting, I might say, than a recent series of editorials that Dr. Jones wrote in the *Journal-Lancet*. I fail to see how any medical man could read them without getting some benefit from them.

The same is true of MINNESOTA MEDICINE. Matters of this type are read and will be read more and more in the future, I am quite certain.

DR. J. T. CHRISTISON (St. Paul): I have a suggestion to offer. There are all sorts of subjects which might very readily be worked up into editorial articles, or articles not editorial, and there are many men in this Association who could write good material. If they want to do anything of that sort on any live subject whatsoever and send that in to the editor, I am sure the Committee would be glad to publish it and perhaps in that way we would get some interesting material, at least locally.

DR. W. A. JONES (Minneapolis): I would like to know how many men there are in the House of Delegates who would write an editorial if you asked them to, and when. Here is a man who offers to write one, but there are very few men who are interested in writing. It is very hard for them to write and the reports we get from the country show how difficult it is for the man who is in touch with things to write an article. They are afraid to.

I like to get an article from some man in the country who has written up his experience in some unique case. He is really interested in something, but the average man doesn't care a rap. If you can stir him up and in some way cultivate a little art of writing, cultivate the art of reporting a case and put him on the right track he may do something, but I believe your support will consist of four or five men in the state of Minnesota if you expect them to write editorials, or even articles.

DR. F. J. SAVAGE (St. Paul): I would like to ask a question of Dr. Drake. How much assistance in the editorial work do you get from these men throughout the state who are supposed to be associate editors and represent each council or district? What percentage of the articles that come out emanate from them?

DR. C. B. DRAKE (St. Paul): Mr. Chairman, really MINNESOTA MEDICINE represents the medical activities of the state that are referred to us. There is a lot going on that is not referred and that ought to be published, articles read before county societies and district societies, case reports at the various hospitals. I don't think anything is more instructive than case reports. We have been publishing more case reports this last year than ever before.

Personally, I think that is very important and I would like to get an expression from the House of Delegates as to what they feel the value of these case reports is. It doesn't take any ability in writing to send in a notice that Dr. Tom Jones was married on such-and-such a date. Those things are all very interesting. We have very great difficulty in getting news items. Of course we are not a news magazine, coming out once a month, where the material has to be in two weeks in advance. By the time it appears it is rather old stuff and we can't claim to be a news magazine.

Personal items are, I think, probably referred to before the scientific articles.

We would be very glad to publish matters of economic interest. I find that most of my activities are in respect to economics, how I am going to earn a living. As regards spending my time writing about economic affairs, I wouldn't earn a living if I did.

I would be glad to have any of the associate editors or any of the secretaries or any of the presidents of the county societies send in some articles of economic interest, phases of different subjects. We would be glad to publish them if they are of general interest to the profession in the state.

There are about two among the associate editors

who have been very helpful in sending in editorials, real material. Of course that is what the associate editors are for. I don't want to give away any state secrets or be critical at all—I know how it is—but it is a fact that about two of the associate editors have sent in material and the others have not.

President Braasch: I don't wish to make any direct insinuations or suggestions, but I might just cautiously suggest that you might permit only the names of those who send in articles to appear in the publication. In other words, in order to hold their jobs they have to send in articles.

Dr. F. J. Savage (St. Paul): What I wanted to get at was this: As I came in the door I talked with one of the members about this very subject and his criticism was that there was too much high-brow stuff and not enough things that interest the general practitioner. Dr. Drake has answered that criticism. He only gets the help of about 20 per cent of his associate editors, and I think if the other 80 per cent would dig in and furnish these articles he would have plenty of material. We all know there are splendid articles going to waste. Dr. Hitchings and I heard two wonderful papers up in St. Cloud and he asked for those papers. They refused to give them to him. There you are.

Dr. W. A. Jones (Minneapolis): Why did they refuse to give them to him? They were afraid, were they not?

Dr. J. T. Christison (St. Paul): One was, yes. The other was to be published in some journal which represented the Veterans' Bureau, a psychiatric subject. Jones was mixed up with them, but it went right over my head. The gentleman who read that paper, however, said he was duty bound to publish that in some journal that had to do with his organization.

President Braasch: I am sure a discussion of this kind is healthy for all concerned. Have you anything further to add?

Dr. W. A. Jones (Minneapolis): In Hennepin County we had a meeting in which we had a symposium of papers written by some of the Veterans' men and not one of them was published although we requested them all. They said they couldn't publish without the permission of the government. That is a fine state of affairs for medical men to get into. Why can't a man be independent enough to publish whatever he wants if it concerns the local interest of his own Veterans Hospital?

President Braasch: If there are no further remarks or suggestions, we will go on to the report of the Necrologist, who I believe is here this morning and will give it to us in brief form.

Dr. Olga Hansen (Minneapolis): Mr. President, Members of the Minnesota State Medical Association: The names of the doctors who have died up to June 1 are included in this report. The Secretary requested that reports be sent in by June 1, and there are a few names that have probably come in to be published in the journal since then that have not been included in my report, so I should appreciate that any such names be handed to me and I will include them in the written report that will be published later.

Dr. Hansen read the report.

NECROLOGY REPORT

Officers and members of the Minnesota State Medical Association:

Since the last meeting of this society, death has taken a high toll of the medical profession in our state. Twenty-four members of our society, one member recently transferred to another state society, and twenty-seven members of the profession who were not members of the state medical society at the time of death, have been called from the medical ranks by death during the past year.

DECEASED MEMBERS OF THE MINNESOTA STATE MEDICAL ASSOCIATION

1. Henry C. Stuhr, Minneapolis. Born, 1874. University of Minnesota, 1900. Died, June 6, 1926.
2. Russell David Carman, Rochester. Born, 1875. Marion Sims Beaumont Medical College, 1901. Died, June 18, 1926.
3. Ernest A. French, Plainview. Born, 1878. University of Minnesota, 1903. Died, August 17, 1926.
4. John Nelson Risjord, Fertile. Born, 1863. Iowa Medical College, 1898. Died, August 25, 1926.
5. Milo E. Bushey, Arlington. Born, 1855. St. Louis Medical College, 1892. Died, August 28, 1926.
6. Edwin J. Lewis, Sauk Centre. Born, 1848. Rush Medical College, 1877. Died, August 29, 1926.
7. Otto Ferdinand Fisher, Houston. Born, 1872. University of Minnesota, 1897. Died, October 11, 1926. (Secretary of County Med. Soc. for twenty years.)
8. William H. Daniels, Crookston. Born, 1877. University of Louisville, 1920. Died, October 14, 1926.
9. James Walter Warren, Faribault. Born, 1881. University of Virginia, 1906. Died, October 15, 1926.
10. Daniel James Paradine, Duluth. Born, 1895. Bennet Medical College, 1911. Died, October 18, 1926.
11. Louis B. Baldwin, Minneapolis. Born, 1872. University of Minnesota, 1897. Died, October 24, 1926.
12. Jean Baptiste Clair, Winsted. Born, 1877. Baltimore University, 1900. Died, November 11, 1926.
13. James H. Beaty, St. Cloud. Born, 1870. College of Homeopath. Med. and Surg., University of Minnesota, 1895. Died, November 27, 1926.
14. Gustavus Adolphus Newman, Stillwater. Born, 1862. University of Minnesota, 1895. Died, December 22, 1926.
15. William R. Murray, Minneapolis. Born, 1869. Rush Medical College, 1897. Died, December 27, 1926.
16. Alvah J. Stowe, Rush City. Born, 1861. N. Y. University College, 1897. Died, January 15, 1927.
17. Bertolet Perry Rosenberry, Winona. Born, 1881. University of Michigan, 1904. Died, January 19, 1927.
18. Robert L. Wiseman, Pine City. Born, 1874. University of Minnesota, 1897. Died January 20, 1927.
19. Ralph E. Morris, St. Paul. Born, 1879. University of Colorado, 1902. Died, January 27, 1927.
20. Joseph Gillespie Millspaugh, Little Falls. Born, 1851. Columbia University, 1877. Died, January 31, 1927.

21. Amos Wilson Abbott, Minneapolis. Born, 1844. Columbia University, 1869. Died, February 27, 1927.
22. Frederic J. Souba, Minneapolis. Born, 1886. University of Minnesota, 1910. Died, March 7, 1927.
23. Robert S. Brown, Minneapolis. Born, 1863. Bennett Medical College, 1895. Died, April 4, 1927.
24. Herbert G. Lampson, Duluth. Born, 1871. University of Michigan, 1895. Died, June 25, 1927.

MEMBERS OF THE MEDICAL PROFESSION NOT MEMBERS OF THE MINNESOTA STATE MEDICAL ASSOCIATION AT THE TIME OF DEATH

1. Alexander Hamilton Barber, Minneapolis.
2. Norman Barden,* Minneapolis.
3. C. L. Codding, Duluth.
4. Alma Dowswell, Kirkhoven.
5. Michael P. Finnegan, Minneapolis.
6. Samuel D. Flagg,* St. Paul.
7. Anson J. Golden, Minneapolis.
8. Theodore Harcum, Brown Valley.
9. Harry Homer Harlan, Red Lake.
10. Edward Eames Holman, Pine River.
11. W. D. Lawrence, Minneapolis.
12. C. V. Lynde, Medford.
13. Joseph Mark, Minneapolis.
14. James Edward Merrill,* Amboy.
15. George Ellis Putney, Paynesville.
16. Hubert A. Pinault, St. Joseph.
17. James Henry Redd, Minneapolis.
18. W. G. Richeson, St. Paul.
19. Harvey N. Rogers, Farmington.
20. William Holmes Salter, Duluth.
21. William H. Smith, Donnelly.
22. William Montgomery Sweney, Red Wing.
23. William Ernest Tryon, Minneapolis.
24. William G. Tupper, Minneapolis.
25. Christian F. Warn, Minneapolis.
26. Thomas R. Watson, Clarissa.
27. L. C. Weeks,* Detroit Lakes.

Each name calls forth a flood of memories, in most cases spreading over a period of many years in one community. Each name carries with it a long story of achievement and of inspiration. Most of these men had practiced twenty or thirty years, several forty and a very few for over half a century and had given full measure of themselves in the service of mankind.

One has contributed brilliantly to the knowledge of the roentgen-ray; another to the diseases of the eye, ear, nose and throat; another to hospital management. One was secretary of his county medical society for twenty years; another was the first superintendent of the North Dakota State Board of Health; another was a charter member of the Ramsey County Medical Association.

The general practitioners far outnumber all others, both in the villages and in the cities. They have frequently chosen to spend lives of helpfulness in comparative obscurity and it is gratifying to note that one community expressed its appreciation of the village doctor before his death by a public festival in his honor, and another community is raising a memorial fund to honor the memory of its beloved physician.

It is impossible in a brief report to even mention the merits of the various members whose memory we honor today. If one man were to be chosen as combining in an unusual way the finest qualities of the scientist, the medical organizer, the medical educator, the skillful surgeon, the family physician and the beloved friend, it would be Amos Wilson Abbott, whose name is written large in the annals of medicine in Minnesota. He was the first delegate from Minnesota to the House of Delegates of the American Medical Association. He was one of the founders of the Minnesota State Pathological Society, and of the Minnesota State Medical Association, and was president of this latter society in 1893.

Of each of these members of our profession who has completed his life of full and satisfying usefulness, it may be said in the words of the old author, "When the ear heard him, then it blessed him, and when the eye saw him, it gave witness of him. He delivered the poor that cried, the fatherless and him that had none to help him. Kindness, meekness and comfort were in his tongue. If there was any virtue and if there was any praise he thought on those things. His body is buried in peace, but his name liveth evermore."

Respectfully submitted,

OLGA S. HANSEN, M.D., Necrologist.

PRESIDENT BRAASCH: Gentlemen, what shall we do with this very conscientious report?

DR. S. H. BAXTER (Minneapolis): I move the report be adopted by a rising vote.

The motion was seconded and was carried by a rising vote.

PRESIDENT BRAASCH: We will next consider the report of the Committee on Hospitals and Medical Education. This Committee report has been published, and in addition there has also been given out a pamphlet which describes the activities of this very able Committee. I have no doubt that you are all familiar with it. We would like to hear from representatives of this Committee if any are present.

Apparently Dr. Pearce, the Chairman, is not here. He has done an immense amount of work in collaboration with other members of the Committee, and with Dr. O'Brien and Mr. Price of the Extension Division of the University. They deserve a lot of credit and I am glad to say their labors are being recognized and courses are given in various portions of the state which will undoubtedly be of great benefit to the members of this Association.

DR. W. A. JONES (Minneapolis): I ask that this report be postponed until eleven o'clock when Dr. Pierce will be here to present his report.

PRESIDENT BRAASCH: If there are no objections, I am sure the Association will be glad to grant the request.

We will next take up the report of the Radio Committee.

*Member of the American Medical Association.

REPORT OF RADIO COMMITTEE

The Radio Committee has a rather disappointing report to make for this past year, inasmuch as no program has been put on the air under our auspices.

The program was arranged which was to have been conducted by Dr. Brady, the health writer for the newspaper syndicate, and after all arrangements had been completed certain objections were raised to our plans by the radio stations, and we were prevented from carrying out this program.

We have made a rather careful study of the various possibilities which radio has to offer our Association, and are at the present time working on two plans, one of which we trust will materialize successfully before the Fall season.

EDGAR H. NORRIS, M.D., Chairman.

PRESIDENT BRAASCH: Is Dr. Norris here? (Not present.) Dr. Earl is in position to speak in regard to this.

DR. G. A. EARL (St. Paul): I have heard Dr. Norris give his report in smaller groups. He said that this year has been one of enforced inactivity as far as the radio was concerned. Because of the rules of the air the man must actually be there in person to read it. It is a question of the ethics involved and other problems of that kind that the Committee had yet to iron out. The year has been spent in study.

PRESIDENT BRAASCH: I overlooked the fact that some of the other members of the Committee are here.

Dr. Adson, have you anything further to add?

DR. A. W. ADSON (Rochester): I was connected with the Committee for the last two years and a year ago I scurried around and got men to speak. One of the criticisms made by the men who did speak was that they were talking into space, no one knowing who they were. A considerable effort was put out to read the address, but the question of ethics arose in letting the name be known and the problem is under consideration at this time.

PRESIDENT BRAASCH: We might listen to any other member of this Committee who is present and who would care to talk on this subject. Dr. Reynolds? Dr. Barney or Dr. Lewis?

We will next consider the report of the Committee on Public Policy and Legislation. It seems to me that due to the great importance of this Committee and considering the wonderful work they have achieved we ought to give them every consideration and give them as much time as they desire to give us in telling us about their work. We have had the report published and are familiar with the work. At the same time there are a whole lot of side lights which we are not familiar with and we would like to hear from all the members of this Committee, all of whom should be recognized and all of whom should be given credit.

I will call on Dr. Herman Johnson to say a few words. (Applause.)

PRESIDENT BRAASCH: As usual, Dr. Johnson is on the outside but we will get him in. We will go on with the next report as we certainly want to hear Dr. Herman.

We will go on to the next Committee, namely, the Committee on Public Health Education. You have read the report which is published and which, as you all know, is a most thorough and excellent one. Great credit should be given to the members of this Committee, and particularly to the Chairman, Dr. Earl.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

In the last revision of the Constitution of the Minnesota State Medical Association a committee on Public Health Education was created. The functions of the state committee are:

"The Committee on Public Health Education shall consist of five members or as many more as the council may determine. Its function shall be: First, to strive to develop an intelligent public viewpoint toward the medical profession; second, to coöperate with the various agencies throughout the state whose function is the promotion of public health, and whose governing bodies are composed in whole or in part of laymen, so that from a medical standpoint these agencies shall be intelligently administered; third, to use such measures throughout the state as may be necessary to eliminate fraudulent medical advertisements from the public press; fourth, to aid and encourage each component society to conduct at least one annual public medical meeting; fifth, to encourage public health educational matters through the channels of the public press, radio, movies, and the lecture platform."

The House of Delegates passed a resolution requesting local component societies to appoint a Publicity Committee of at least three members to function locally and in harmony with the State Public Health Education Committee.

We have given the functions outlined and the resolution because this is a new committee and its purpose and action are still in the process of development. No matter what is the name of this committee, it is evident the purpose is a study of and adjustment of the relations between the medical man and the public. The first year, Dr. F. J. Savage served as Chairman, and we quote from one of his reports: "Some years ago while listening to the debate in the House on our Basic Medical Practice Act, I was greatly interested and rather appalled at the attitude of the members of the Legislature toward the medical profession. It seemed to me that if the apparent view of the legislators represented an average public opinion it was high time that medical men should wake up. It seemed to me that the essential underlying basic principle should be that the public should understand the medical profession, what they have done in the past, what they are doing today, and what they stand for." With this in mind, Dr. Savage suggested the Public Health Education Committee of which the present represents the second year of appointment or service.

The scope of the problem has no limits—the questions of State Medicine and its semi-relations, as the Sheppard-Towner Act, Preventive Medication, Free

Clinics, Lay Organizations of all types, Central Health Councils, Fraudulent Medical Advertisements. In order to make any progress it is necessary to limit the program for any given period. The committee suggest that the following should be features for 1927.

1. Public Health Meetings,
2. Representation on Lay Health Organizations,
3. Contact with the Public Press,
4. Periodic Health Examinations,
5. Preventive Medication,
6. Women's Auxiliary,
7. Coöperation with the Legislature and Radio Committee.

Last fall Dr. Meyerding organized a series of four Public Health Meetings at Blue Earth, Fairmont, Pipestone, and Worthington on October 26th, 27th, 28th and 29th. In each case the doctors of the district were first consulted. Lay people as well as medical men were used. Four State Organizations took part, the Minnesota State Medical Association, the State Board of Health, the School of Medicine of the University of Minnesota, and the Minnesota Public Health Association. The expense of such meetings by way of publicity and program was considerable. Less ambitious efforts were made elsewhere and with less time, energy, and money there was a smaller success. These meetings were experimental in nature, and, while the State Committee will assist in every way possible, it is evident that the success must rest largely in the hands of the local organizations. Dr. Chesley, of the State Board of Health, Dr. O'Brien, of the University, Reverend Sainsbury, of St. Paul, Badger Clark and others coöperated splendidly in these meetings.

The growth of Lay Organizations interested in health matters has been phenomenal and most of them have very definite programs. The State office has a list of over sixty such organizations. Some States have a Council of Health composed of delegates from all such organizations. Hennepin County is dealing with this matter by appointing two of its members to coöperate with each organization. No one is so competent to advise them as qualified delegates from the local medical societies.

Ramsey County has established a very definite and practical contact with the public press. The County Chairman advised that already they have been able to render assistance. News must be fresh. It comes by wire or telephone, and is old in the eyes of the editor very quickly. The local committee in contact with the public press must be ready to serve at all hours of the day or night. The press wants to be right in what it advises in a medical way to the public, but it has no competent personnel to render judgment. If given encouragement it will naturally look to the local society. In our Public Health Meetings the Associated Press gave us splendid notices.

Periodic Health Examinations are being stressed in the program of the A. M. A. They have a splendid blank useful in any physician's office for this purpose. The early death of many of our keenest minds seems a great waste. If they only lived a decade longer, much valuable service to humanity would be rendered.

Preventive medicine must be constantly emphasized. We will have another smallpox outbreak because we are again careless on the matter of prophylaxis. So much of prevention has been accomplished that we have lost our appreciation of the efforts of the past. The practicing physician must see that prevention is his work. The public is convinced that preventive medicine is a good thing and wants it. What the doctors will not do, the State and Lay Organizations will do. The family physician is the best man to take charge of preventive medicine for his patient. There are many things that the State can do in the best manner; such as, control of epidemics, management of water and food supplies, and tabulating of health statistics. Organizations have their places for the needy. How far should the State go in medicine? How much should lay organizations do? The answer rests with the physician.

The Women's Auxiliary needs no introduction. Aiding us in this work, they are speaking for themselves and with increasing effectiveness. There are scarcely any of the problems they cannot assist with and probably in some take the leadership part.

In the placing of problems of Health and Disease before the public by our profession, certain steps suggest themselves.

1. Appreciation of the laity's viewpoint.
2. Knowledge on the part of our profession of these facts that the public should know.
3. Acquaintance of the Public with these facts.
4. Securing of proper action.

All four points as outlined contain the possibilities of an immense amount of work, and the committee is striving to get under way. It feels it must move with caution or much time and money could be wasted.

It is to be hoped that the local societies will secure on their committees men willing to work. Some arrangement in the form of regional grouping must be established between the State office and County societies. Definite tangible results will be hard to see on the question of Public Health Education. When things go fairly well the work will not be noticed. Only when we are up against such problems as public opinion reflected in the State Legislature do we realize that something has been neglected. There never can be an end to the study of relations between a medical man and the public, because it is a live subject and like everything living is subject to change of advancement or decay. Eternal vigilance will always be needed.

A chart of County Societies and objects was shown.

A glance at the chart reveals where the strength or weakness of the movement lies. It is evident that St. Paul or Minneapolis men cannot serve on the lay organizations of the county in which they do not reside. For the men in Mankato to coöperate with and give information to the papers of Duluth is impossible. Each county society will have its own peculiar and local problems to deal with. Personal contacts have to be made with the local editors, lay health organizations, and civic bodies. The State Committee is necessary. Regional grouping for purposes of advice and

encouragement will be helpful, but the committee wishes to close its report by emphasizing that any progress or failure will depend on the personnel selected by the local society.

G. A. Earl, M.D., Chairman.
H. F. Helmholz, M.D.
A. C. Baker, M.D.
W. A. Coventry, M.D.
J. E. Hynes, M.D.
F. C. Schuldt, M.D.

Dr. G. A. Earl (St. Paul): I will not read the report, which is altogether too long to be read at a time like this, and as I have an opportunity to present the work of the Committee tonight I feel I should only take a minute.

If other committees, such as the Editing and Publishing Committee that have an experience of years, that have a definite, tangible task to do, have felt the need of advice and help, you can imagine that the Committee on Public Health Education, which is only in its second year and which has a subject that is so general if not so big, needs your help and advice.

In order to secure this the Committee has adopted the method of trying to reach ultimately, during the year, every one of the 2,000 members of the Minnesota State Medical Association in small groups of from ten to fifteen, at which time full and free expression will be given and an effort be made through a primer to quote the essential or general opinion that is involved on this question of Public Health Education.

The Committee realizes that it cannot undertake, as far as time, money and effort are concerned, the health education of every man, woman and child in the state of Minnesota. That must be done by the state, reaching the children of the public schools, the high schools and the universities. It must be done by the church organizations with their parochial schools and with their private schools, colleges, and other coöperative organizations of this type.

The amount of money that should be expended is so terrific that as doctors we haven't got it, we haven't the time, we haven't the energy. The Committee realizes that it must be worked out through lay organizations, such as the Minnesota Public Health Organization, which has a budget of money to spend. It would be impossible for us to contribute out of our pockets, but we are willing as doctors, the same as other citizens and probably in a little greater proportion, to give our time and energy and money in the cause of public health education.

In order that our energy and time and money may be wisely directed, this year is to be a year of finding out from the individual members through the group method how we can secure the best possible results. I am sorry we have only been able to reach about 125 or 150 men of the Association to date. They have been reached through the regular publicity committees of the county associations because, of course, we have no organization. We are simply a committee of the state and of the county organization. We have no desire to produce any new set of officers or any new set of meetings, so we have called meetings through the publicity committees. The first meeting was with the individual members of the Committee and in some cases with a larger group, and I am sorry that out of this House of Delegates we have only been able to reach a few. We are working through the regular official channels.

President Braasch: The importance of this Committee is hard to realize. It is of tremendous importance. I think the biggest job we have is to get the public acquainted with our methods and ideals and be in sympathy with them. It is a tremendous undertaking. I am quite certain, however, this Committee will measure up to it. It is going to take years to accomplish this end, but they are going to make a good beginning. The scope of this Committee is very wide but I am sure that they will measure up to it. When we consider that it was only two years ago that Dr. Frank Savage had the vision to formulate this Committee, and the work that is already done and started, I think it is certainly open to great commendation.

A motion will therefore be in order to adopt this Committee report. Do I hear such a motion?

Dr. C. L. Haney (Duluth): I move its adoption.

The motion was seconded.

Dr. S. H. Baxter (Minneapolis): I move that a part of this motion should be made a permanent committee.

President Braasch: This motion has been amended to read that this Committee be continued as a permanent committee to be appointed by the President. I am sure the new President will heed your suggestion.

The amendment to the motion was put to a vote and carried.

President Braasch: A vote on the motion as amended is now in order.

The motion as amended was put to a vote and carried.

President Braasch: We will now return to a most important order of business, namely, to listen to our worthy friend and advisor, Dr. Herman Johnson. (Applause.)

Dr. Herman Johnson gave a brief address on the work of the Committee on Public Policy and Legislation. (Applause.)

REPORT OF THE COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Gentlemen:

Your Committee of Legislation and Public Policy begs leave to submit the following report:

During the last half of the year 1926 your Committee devoted its time and attention to the drafting and preparation of such proposed legislation as was directed by the Council, to come before the 1927 session of the Legislature; most of its efforts being devoted to what has now become known as the "Basic Science Act." This was an exceedingly hard bill to draw so as to be absolutely fair. A number of drafts were made and submitted to medical societies, legislators, and representative men and women, and such constructive criticism as seemed to be of merit was worked into the

bill, each correcting and improving upon the preceding one, until your Committee, after duly considering each one, concluded that all had been done which could be done prior to the Legislative session.

After the Legislature had convened, the proposed "Basic Science Act" was submitted to several members thereof, who aided us somewhat to put it into the form in which it was to be introduced. The difficult and trying task of your Committee was then at hand, namely, the campaign of education of legislators on the subject and the act. The importance of the act soon became manifest, and discussion of it spread throughout the state. Opposition developed and acquired considerable force. Explanation of the intent, purpose and effect of the law, to the Committee of both Houses and the members of both Houses, required a good deal of time.

Consideration of the bill in the Senate was very strenuous. Several amendments designed to destroy the purpose of the bill were introduced but were promptly voted down by a vote of 45 to 21. Then an amendment was introduced changing the proposed membership of the State Board of Examiners in the Basic Sciences to five members, viz.: two full time paid professors or associate or assistant professors not actively engaged in the practice of healing, from the University of Minnesota, or any other College or University in Minnesota, one doctor of medicine and surgery, one doctor of ostcopathy, and one doctor of chiropractic. Such amendment prevailed, and, as amended, the bill passed the Senate. Your Committee has become satisfied and believes that the above mentioned amendment in no way minimizes the value of our bill and may prove to be an improvement upon the originally proposed membership of the Board of Examiners, as it removes the cry of prejudice and bias, of no representation for Osteopathy and Chiropractic, with which Wisconsin is confronted.

In the House the discussion of the bill was also spirited. A number of amendments were proposed which would have defeated the real object, purpose and intent of the bill, but such amendments were consistently lost by approximately the same vote, 73 to 30. After passage in both Houses, the bill was signed by the Governor, and is now the law of the state.

While the Board as now constituted is not exactly what we proposed, legislation is always a compromise, and, realizing how fanatical the public is in its interest in cults and quacks, it may be that this board will work out better, when properly organized and honestly conducted by its members, than the board as originally planned.

One of the most important features of this bill is that it provides for money and machinery to enforce the law. No law is good unless there is proper provision for its enforcement.

The "Basic Science Bill" was fought from beginning to end by all kinds of cults, quacks and healers, including optometrists, and we have reason to believe that others more or less secretly fought it, although they were exempted. It seems that all means possible were employed to defeat this bill.

There was other opposition which we encountered, which is hard to understand, but we can only assume that certain politicians thought if they could kill the "Basic Science Bill" they would so dishearten the Medical Association that they would break its power and scatter to the four winds the powerful influence that the Minnesota State Medical Association now wields.

There will be a detailed report filed with the Councilors with regard to many unexpected things which we encountered which may be of great use to the Association at some future time.

Your Committee does not deem it necessary to review all the provisions of the law in this report. It is now known as Chapter 149, Laws of Minnesota, 1927. It is suggested that every physician and surgeon read the law and thoroughly acquaint himself with it, so that he may make timely performance of the requirements hereby placed upon him.

Your Committee has received the compliments of numerous Medical Boards of other states, nearly all of whom are of the opinion that Minnesota now has the best medical practice law in the United States and it is the prevailing opinion that by setting one uniform standard of knowledge and education in the Basic Sciences for all engaged in the practice of healing much has been accomplished for the State of Minnesota and its citizens. That the new Minnesota law will be borrowed and enacted in the near future by many sister states now seems certain, as many requests were made at the recent meeting of the American Medical Association for copies of the bill.

While the Basic Science Act was the major work and objective of your Committee, its program contained other items of interest and importance, one of these being the amendment of existing laws with reference to the State Board of Medical Examiners or Medical Practice Act. Efforts to procure certain changes therein were successful and the changes made are now set forth in Chapter 188, Laws of Minnesota, 1927. The State Board of Medical Examiners, formerly consisting of nine qualified physicians, will hereafter be composed of seven physicians. Appointments to the Board are made by the Governor and for each appointment the Council of the Minnesota State Medical Association recommends to the Governor three physicians qualified to serve. Fee for examination is raised from ten to twenty dollars. Immoral, dishonorable or unprofessional conduct, as grounds for refusal to grant license or for revocation of license, are specifically defined, as is also illegitimate advertising. Fee for license without examination is raised from fifty to seventy-five dollars. Practicing without license is changed from a misdemeanor to a gross misdemeanor and the penalty is accordingly more severe. It is urged that every physician and surgeon promptly read the new law and acquaint himself with the provisions thereof.

In connection with the bill which was passed defining and regulating the practice of massage, creating a state board of massage examiners, etc., your Committee was successful in so modifying the definition

of massage therein contained as to render it harmless to the medical profession. By the new law relative to massage it is declared that the practice of massage is distinct from the practice of medicine, surgery, osteopathy, chiropractic or chiropody and means "a method, art or science of treating the human body for remedial or hygienic purposes by rubbing, stroking, kneading, tapping or rolling same for the purpose of relieving, alleviating or reducing the affected part thereof."

Your Committee also kept a watchful eye on the Beauty Culturist and Barber bills which were enacted into law, with a view to keeping them free from any objection, and, as passed, those bills are without any objection to the medical profession.

No change was made in existing laws relative to the practice of osteopathy, although a bill was introduced by the osteopaths which would have permitted them to enlarge the scope of their activities, but this bill did not survive the action of the Committee. However, a bill was passed raising the standard of educational requirements of applicants for license to practice chiropractic, such a bill having been introduced at the instance of the Chiropractic Association.

An accomplishment of your Committee which was perhaps as great and as important as anything done by it in the way of procuring desired legislation was the prevention of the enactment into law of an undesirable bill, namely, the Naturopath bill, proposing to legalize this cult or alleged branch of healing, and defining Naturopathy in such a manner as was not understood by Naturopaths themselves, but giving them the right to do practically everything the medical profession, chiropractors and osteopaths are now entitled to do.

The chairman was in full charge of the Committee's activities, and as the session of the Legislature drew near he opened and maintained an office in the St. Francis Hotel (about November 18). Later, as it was found necessary to enlarge the scope of the Committee an office was also opened at the St. Paul Hotel and the Chairman continued in personal charge of such offices and of the work of the Committee until the end of the Legislative session, about May 1, 1927. During all of the time he devoted his entire time to the work of the Committee.

The Committee was untiring in its efforts to get these laws passed and bad ones killed. However, no laws of this kind could have been passed without a well organized and united profession behind them. The Committee fully appreciates the good work of individual members of the profession, the local legislative committee, the officers of the local societies as well as the active help and support of the President, Dr. Braasch, the Secretary, Dr. Meyerding, and the Councilors. We want especially to call the attention of the profession to the grand body of men of which the Council is composed, and the quiet way in which this body acts. We want to assure you that they go over matters very carefully, and they can absolutely be depended upon to do, at all times, what is for the best interest of the whole profession. We know that they studied these bills very carefully and many valuable suggestions were received from them. They backed the Committee up in every way they could. The President, Dr. Workman, spent several days in St. Paul, and, together with a number of the members of the Committee, stayed up the entire last night of the session, helping to watch so that the Naturopathic bill could not be brought up, though several attempts were made. When morning came, we decided that the grand old man, Dr. Workman, was the youngest and spriest of us all.

The various members of the Committee, including Dr. Sogge, gave freely of their time, spending as much as a week at a time in St. Paul, and aiding in every way in the passage of this bill. The Chairman cannot compliment these men too highly for the work they did. The Chairman also wishes to express to Dr. Bolsta his appreciation for all the work he did in gathering the information and getting together the rough draft of the "Basic Science Bill."

The Committee feels certain that attempts will be made to try the constitutionality of these laws and that the profession must be ready to defend them to the U. S. Supreme Court, if necessary. The Committee recommends that there be no let-down in watching legislation as we have reason to believe that the Naturopaths, as well as many other cults, will try to get by with a bill for the next one or two sessions, or will likely try to amend the "Basic Science Bill" in order to let them in.

The Committee feels that the "Basic Science Bill" is of more value to the younger men of the profession than to the older ones, as the result of its passage will become more noticeable as time passes, and that it will take ten or more years before its full result will show up.

In closing this report, the Committee recommends that the Association, at all times, be prepared to have men present at every legislative session, looking out for its interests.

Respectfullly submitted,

H. M. Johnson, M.D., Chairman.
Charles Bolsta, M.D.
J. T. Christison, M.D.
C. B. Wright, M.D.
S. H. Boyer, M.D.

President Braasch: It will be impossible for us to express our appreciation for what Dr. Herman Johnson has done and we will be eternally indebted to him.

I will now call upon some of the other members of this Committee who have done so much and who have shared this honor in full degree in putting it across. We would like to hear from Dr. Bolsta.

Dr. Charles Bolsta briefly addressed the House of Delegates on the work of the Public Policy and Legislation Committee. (Applause.)

President Braasch: We will next listen to Dr. Christison.

Dr. J. T. Christison also addressed the House of Delegates on the work of this Committee. (Applause.)

PRESIDENT BRAASCH: We would like to call upon our worthy counsellor and active committeeman, Dr. C. B. Wright, of Minneapolis.

Dr. C. B. Wright gave a brief address on the work of this Committee. (Applause.)

PRESIDENT BRAASCH: Is Dr. Boyer here?

Dr. S. H. Boyer gave a brief talk on the work of this Committee. (Applause.)

PRESIDENT BBAASCH: It seems to me the report of this Committee is hardly complete unless we call on the committee man extraordinary, Dr. Sogge, for a few words. He has done so much to help this work along.

Dr. H. B. Aitkens took the chair.

Dr. L. Sogge briefly addressed the meeting on the work of this Committee. (Applause.)

CHAIRMAN AITKENS: The medical expert obtains his reputation by concentrated attention to his line of business. A new medical expert has come before us, the medical legislative expert. Several of them have narrated their experiences and proved their title to be legislative experts.

It will now be in order to adopt the report of this Committee.

DR. W. A. COVENTRY (Duluth): I move the report be adopted.

The motion was seconded, was put to a vote and carried.

CHAIRMAN AITKENS: We will now hear the report of the Committee on Contract Practice. Is Dr. McCloud here?

DR. C. N. MCCLOUD (St. Paul): Mr. Chairman and Members of the House of Delegates: My report is going to be very brief. You have all read the report.

The question came up in the minds of the Committee as to just how much territory we were expected to cover in regard to this matter of Contract Practice. To cover the whole subject of Contract Practice I believe it would apply to men who are engaged in any sort of contract practice, such as men who are engaged in the practice of medicine and surgery in the iron range. We didn't believe the Committee were expected to interfere in any way or make any sort of report on that kind of practice. We felt, after a good deal of deliberation, that what we were expected to do was to make a report and make some investigations as to the status of contract practice as relating to the Workmen's Compensation Act, and with that in view we attempted to get the information from headquarters.

As stated in my report I immediately wrote to Dr. Harris of the American Medical Association, who I was informed was the proper person to approach, and he advised me they had sent out questionnaires to many of the state societies and county societies to obtain an expression of opinion regarding this matter. I was informed that he had no material at his disposal to furnish us and it happened that some time later I happened to be in Chicago and met Dr. Brice and we took the trouble to go to the headquarters of the American Medical Assoication. We searched for Dr. Harris or any of the confreres and were unable to get any further than we did by correspondence.

It is interesting to me to note that Dr. Harris is to be here tonight and I believe he is going to touch upon this subject which we are now, as a Committee, working on and I hope the Committee may obtain some valuable information from this session this evening.

Dr. C. N. McCloud read the report of the Committee on Contract Practice.

REPORT OF THE COMMITTEE ON CONTRACT PRACTICE

Your Committee on Contract Practice met on May 16, and it was reported by the Chairman of the Committee that he had confererd with Dr. M. L. Harris of the American Medical Association, and he was advised by Dr. Harris that the Judicial Council are investigating this subject of "Contract Practice" and at the present time are searching for information on the subject, having sent questionnaires throughout the entire country, and they hoped to have some facts on this subject but no information at this time was available.

The Chairman also reported that he had endeavored, while in Chicago recently, to see Dr. Harris or others in authority in an attempt to secure some data. His efforts were without avail.

Your Committee discussed this matter at some length and the two problems which seemed to require solution were: (1) The advisability or not of attempting to establish any fee basis. (2) Whether or not it was advisable or legal that the insurance companies should have the right to dictate the appointment of physicians or surgeons to take care of employees insured under the compensation act.

The Committee realized that the analysis of this situation would lead to very far reaching and complex questions affecting the whole medical body and while, of course, this will ultimately necessitate a discussion of the subject by the constituent county societies, we recommend that measures in this direction be adopted, and suggest, for the consideration of the State Association, the appointment of a committee to study the whole question in conjunction with representatives of all of the insurance companies doing business in compensation insurance in the State of Minnesota, and further, that this should also be done in conjunction with a representative of the Industrial Commission.

Respectfully submitted,

C. N. MCCLOUD, M.D., Chairman
F. S. WARREN, M.D.
A. R. COLVIN, M.D.
C. L. HANEY, M.D.
J. G. CROSS, M.D.

DR. C. N. MCCLOUD (St. Paul): We further suggested that inasmuch as this Committee was unable to obtain any information or to know how far to go legally, perhaps it would be best to appoint another committee with this object in mind, to determine exactly what was expected of the Committee, and I believe such a committee would be able to do a good deal of pioneer work.

As near as we can find out, nothing has been done by any of the other states and it would seem to me that it opens a large field.

I don't know how much general interest this subject has. It is vital to a good many men who are engaged in doing this sort of contract practice for certain insurance companies, but whether any recommendations of the Committee are going to have any effect on the situation, I cannot say.

In conclusion, the Committee suggests that the Committee work in conjunction with all the representatives of all insurance companies doing business in compensation in the state of Minnesota. Further, this should also be done in conjunction with the representative of the industrial commission, and I think we might add, perhaps, that it would be well to consult with the Attorney General. (Applause.)

President Braasch: We have the great honor of having in our midst this morning Dr. Harris, of Chicago, who as you all know has done more in this field, probably, than any other member of the American Medical Association, and whom we regard as one of our honored guests. We would very much like to hear from Dr. Harris. (Applause.)

Dr. M. L. Harris (Chicago, Ill.): I am very glad to be here, I assure you, and I didn't hear what the gentleman who preceded me had to say on the subject. I am very sorry not to have heard it because I am extremely interested in the subject of contract practice and the Workmen's Compensation Act, and I don't know what points he brought out so I can't discuss any of the points.

As you probably know, I am expected to speak on the subject of contract practice this evening in the meeting on medical economics, and I am sure you don't care to hear anything now which I may have to say this evening.

The subject, as you probably know, is an important one, one which is growing in importance constantly, from necessity, from economic conditions which are constantly undergoing considerable change, so that we find the economic situation in the position today where it is very different from what it has been in the past. The profession must take cognizance of these changes in economic and industrial situations and provide proper means for meeting the situation to the advantage of those who are involved, the employers and the employees as well as the physicians.

It is a subject which demands most careful study and consideration and can't be passed by in a minute's discussion or talk but must be treated in a very earnest and serious manner. (Applause.)

Dr. S. H. Boyer (Duluth): I have the honor to introduce to you today the most silent politician in the legislature, the poorest orator in the legislature and the best friend we had in the legislature in the passing of the Basic Science Bill. Mr. M. B. Collum, of Duluth.

The audience arose and applauded.

Mr. M. B. Collum (Duluth): I simply came in to see my friend, Dr. Johnson, who labored with me somewhat down in St. Paul. He did all the work and I simply filled in occasionally. I had no other motive in coming, so this is rather unexpected and I am most pleased.

I will say, while I am on my feet, that the work of a legislator, with which some of you are familiar, is sometimes very strenuous but he can always make good if he is called on. You don't need much eloquence in the legislature but you do need an honest motive. When your bills are right and you can appeal to the legislature with the proof in your hands, the work is not very hard.

I thank you. (Applause.)

Chairman Aitkens: In the matter of the report of the Committee on Contract Practice, does any delegate wish to express himself on this matter?

Dr. A. C. Tingdale (Minneapolis): I only wish to say a few words on the second part here, whether or not it was advisable or legal that insurance companies should have the right to dictate the appointment of physicians or surgeons to take care of employees insured under the Compensation Act. I think this is a very vital point.

I suppose the Committee here has given suggestions and I suppose something will be done by the State Association, but I think I speak for hundreds and very likely even for thousands of men who are not here today who I believe would like to be heard on this very point. It is one of the things that the men at large feel they are being imposed upon by the insurance companies inasmuch as the patients they have had for many years are often taken away from them by the insurance companies. The men themselves have not a right, evidently, under this law, the Workmen's Compensation Act, to select their own doctor even if he has taken care of them for years and years.

Of course we know that the employer has the right to select the physician, but as a rule the employer turns these over to the insurance company and we know that again and again these insurance doctors who are employed by the insurance companies not only take the patients that come to them but very often if such patients are in your hands they will take them out of your hands and take charge of them after that. This, I think the physicians and the surgeons of the profession at large feel, is a great injustice and they think and I think something ought to be done by this Association to make the law read in such a way that the men themselves could select the family physician if he is a member, say, of the State Medical Association or a legalized practicing physician.

Dr. F. J. Savage (St. Paul): This same subject appears in a resolution which will undoubtedly come before the Resolutions Committee in the natural course of events and it seems to me it doesn't need to be discussed now.

Chairman Aitkens: Will someone move the adoption of the report of this Committee?

Dr. A. C. Tingdale (Minneapolis): I move the adoption of this report.

The motion was seconded, was put to a vote and carried.

Chairman Aitkens: Dr. Harris has thought of something that ought to be put before you at this time.

Dr. M. L. Harris (Chicago, Ill.): A gentleman raised the point on which I think I can give you some little enlightenment as we have gone through the same question in the state of Illinois on the Compensation Act and insurance companies having the right to select physicians.

Our law provided at one time, and does at the present to a certain extent, that in case the patient wishes to select his own doctor he must do it at his own expense. We have tried that out and the law has not upheld that contention. The patient may have the right to select his own attendant and the employer is bound to pay a reasonable doctor's fee. The insurance company cannot come in and assume the right to take the case away from the family doctor if the patient objects. We have tried it out in our courts and they have sustained the doctor, that the employer is bound to pay a reasonable fee for service rendered by a competent doctor, so you can take it from our decisions and work on it to that end.

When an insurance company comes in and says they have the right to take the case they are in error and I think the medical profession should stand on that position, that the patient has the inalienable right to select his own attendant. The employer has the certain right to see that that attendant is a properly qualified physician and has the right to have his own physician examine the patient at certain intervals to see that his rights in the case are protected, but he must pay a reasonable bill to the surgeon or attendant selected by the patient. (Applause.)

Chairman Aitkens: Dr. Hamilton of the Committee on Expert Testimony.

Dr. A. S. Hamilton read the resolution, in response to which the Committee on Expert Testimony was appointed.

Dr. A. S. Hamilton (Minneapolis): In getting together a bill or any set of ideas which would be accepted not only by medical men but by practicing attorneys in courts and which would be sustained by courts, or where there would be any hope of getting it through the legislature, there have been a great many remedies proposed with respect to testimony of this sort. In reading them over one is rather surprised to see, year after year, the same arguments adduced. I think there has been no progress for many years.

For instance, Dr. Merrill, of Stillwater, as far back as 1893, introduced a bill to the legislature of Minnesota which I think would be endorsed by practically every medical man at the present time.

The essence of the bill is that expert testimony should be introduced by men who are appointed from neutral sources, that the courts would appoint the medical men to make the examinations and give the testimony and they should be paid from similar sources so there would be no possible connection between the plaintiff's and the defendant's side and the one giving the testimony.

Needless to say, Dr. Merrill's bill did not pass and the same thing has been tried at other legislatures and did not pass.

Somewhere in 1894 Michigan passed a bill of this sort and the supreme court said it was unconstitutional. Since then California has passed a similar law that the court is to appoint the examiners who are to present their opinions and they are to be paid from the county fund. Whether it will stand the test of the supreme court I don't know.

Among other things we discussed the matter with the Bureau of Legal Medicine of the American Medical Association, and the advice they gave us was that the Committee which has been appointed by the American Medical Association to act in conjunction with one from the American Bar Association has made no progress and has met the same difficulties that we have.

In brief, the longer we came in contact with the attorneys we found they had a wholly different view of this thing than we did. It seems to me that the essence of the doctor's idea is that he should appear in court in a judicial or semi-judicial relationship and if he is to be a witness he is to present his findings in written form and be rather exempt from the experiences of cross examination. The attorneys don't see it that way and won't support a bill of that kind.

At the meeting of the last legislature a bill was introduced and this Committee was only to investigate the matter. The essence of the bill introduced was this idea of neutral testimony. It became evident very early that the attorneys very largely disapproved it and it was doomed from the beginning.

The formal report which the Committee offers is as follows:

REPORT OF THE SPECIAL COMMITTEE OF THE MINNESOTA STATE MEDICAL SOCIETY ON MEDICAL EXPERT TESTIMONY

Your Committee has investigated, at considerable length, both among physicians and attorneys, the subject of medical expert testimony and begs to report as follows:

The physicians in general approve some method of developing medical expert testimony from nonpartisan sources. The physicians also wish a court procedure which will cease to emphasize the differences of opinion between physicians, which are more apparent than real. On the other hand, the legal profession very generally, at least, doubts the advisability of accepting any method so far proposed as a substitute for the methods already in use.

It has been suggested by attorneys that disciplinary action within our own profession is the best method of dealing with our difficulties. Obviously, such action is as impossible in our own ranks as it is in those of the legal profession.

Even a superficial investigation of the subject shows many glaring faults in present procedure but the elimination of these has not been accomplished notwithstanding the efforts of many men through a long period of years. Up to the present time, for example, there has been developed no adequate method of qualifying an expert in any line of medicine. Any physician duly licensed in the state may qualify as an expert in any line merely by his own assertion but there is no reason

to believe that judges possess any special ability or any special knowledge of the merits of physicians that would enable them properly to select duly qualified experts.

At the present time, the question of medical expert testimony is so bound up with the general rules of court procedure and admission of evidence that it is impossible to consider a reform in the method of introducing medical expert testimony without some change that contemplates an entire revision of court procedure.

After due consideration of all the complexities of the situation, it is our opinion that, until the American Bar Association and the American Medical Association, acting conjointly, shall agree upon some procedure, it is unwise for us to contemplate any definite action toward reform.

ARTHUR S. HAMILTON, M.D., Chairman
SAMUEL H. BOYER, M.D.
CARL J. HOLMAN, M.D.
WALTER W. NAUTH, M.D.
ARTHUR A. SWEENEY, M.D.

Dr. Hamilton read the report.

CHAIRMAN AITKENS: Does anyone else wish to speak about the Committee's report?

Will someone make a motion to adopt the report?

DR. C. B. DRAKE (St. Paul): I so move.

The motion was seconded, was put to a vote and carried.

CHAIRMAN AITKINS: We will now hear the reports of the delegates of the American Medical Association. I will call on Dr. Litzenberg. Dr. Litzenberg sent in a report which you all have and perhaps he has something further to add.

Dr. J. C. Litzenberg presented his report.

REPORT OF THE DELEGATES FROM MINNESOTA TO THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

To the House of Delegates of the Minnesota State Medical Society.

Gentlemen:

Your delegates to the House of Delegates of the American Medical Association beg leave to submit the following report:

Inasmuch as the proceedings of the House of Delegates have already been published in the Journal of the American Medical Association, we will not attempt to make a detailed report, but will only endeavor to point out a few of the outstanding questions which we have considered will be of special interest to this House of Delegates.

The House of Delegates was called to order by Dr. Fred C. Warnshuis of Michigan, who has been speaker of the House ever since the retirement of Dr. Hubert Work, to become a member of the cabinet of the President of the United States. Dr. Warnshuis outlined the work to be done by the House of Delegates. In part he spoke as follows:

"Members of the House of Delegates:

"Convened in annual session in the capital of our nation, it occurs to your Speaker that it would be consistent and characteristic if we caused our first official act of this session to be recorded as one in which we convey to the President and through him to the people of this nation a message of greeting and expression of esteem. To that end do I submit for your approval, if so disposed, the following message:

"'Honorable Calvin Coolidge,
President of the United States:

"'The American Medical Association, representing 94,000 doctors of medicine, convened in annual session, extends cordial greetings to you. We affirm anew the fundamental principles and objects of our profession. We subscribe again our willingness to contribute our services for accredited humanitarian purposes. We pledge a continuance of persistent efforts to unfold the unknown laws of physiology and hygiene and to uncover the causative factors of disease.

"'We are ever ready to apply approved scientific principles and practices to enhance the health of our people that their vocational and social pursuits may be attended by a minimum of disease and physical incapacity.

"'In this spirit we convey to you, Mr. President, our greetings and felicitations.

The American Medical Association,
Olin West, Secretary.'"

The address of the Speaker was followed by the retiring president, Dr. Wendell C. Phillips of New York. The keynote of Dr. Phillips' address was the part to be played by the physician in the health program of the United States—which he emphasized as follows:

"We should so construct and conserve our health problems and policies that we may convince the public, which really pays the bills, that no fragments of opportunity are lost or misused."

The address also stressed the preeminent position which should be given to the physician as the only individual in the community with adequate basic knowledge on which to act in health matters.

"The medical profession should throw off its mask of reticence and its shrinking attitude toward reasonable publicity concerning health education. Professional policies narrowly conceived can never successfully oppose the rightful interests of the public. It is time to strike the shackles not only from the shrinking attitude of the medical profession toward the public espousal of educational programs, but also from its attitude toward the lay press, the radio and great assemblies of truth-seeking people. The physician has no right to conceal from non-medical readers the great body of news of the highest importance which is his to communicate."

He also stressed the point that the Congress of the United States has placed restrictions upon the practice of medicine by the unwarranted limitations of the amount of alcohol that could be prescribed by the physicians.

Following the address of Dr. Phillips, President-Elect Jabez N. Jackson addressed the House of Delegates, taking for his theme the "Principles of Medical Ethics." He closed his address with the following statement:

"It is my firm conviction, therefore, that a comprehensive exposition of ethics should be undertaken, first in a thorough course of instruction to our oncoming young men in medicine right at the onset of their career and the essentials of character inspired equally with the infusion of scientific knowledge. Thus inspired, we should have a new generation of worthier men to honor a worthy profession. Furthermore, when doctors themselves more fully understand our principles they will be better prepared to represent our profession intelligently and to defend its ideals.

"Finally, I believe that a more comprehensive and explanatory manual should be composed which will translate into the language of the laity a real understanding, and that by word and in print its arguments should be carried to the people. Its composition should probably be referred to the Judicial Council."

Then followed the reports of officers and committees of the association, and the presentation of resolutions of proposed legislation, all of which were referred to reference committees for consideration,—the most important of which will be brought to your attention:

Dr. M. L. Harris, Chairman of the Judicial Council, presented the following report, which was adopted:

"The Council concurs in the opinion that all interviews or articles of an educational nature on medical or health subjects intended for the lay press or lay audiences should give expression to the consensus of opinion of the medical profession rather than to personal views which may be in conflict therewith, and that such articles should appear preferably under the auspices of this Association, or of one of its component societies or constituent associations."

Dr. William A. Pusey of Illinois presented the report of the Reference Committee on Medical Education, of which committee the senior delegate from Minnesota was a member. This report called attention to the fact that the medical schools of the country are crowded to their capacity, there being only 1 1/6 per cent of vacancies, or one vacancy to each three schools.

"Physicians are disappearing so much more rapidly than they are being produced that it will probably be 1965—about forty years—before we see again in this country 130,000 practicing physicians, the number which it is estimated we now have, unless the opportunities for studying medicine are very considerably enlarged or the age of graduation lowered. This in spite of the fact that the population of the United States is increasing rapidly and will be about 50 per cent greater in 1965 than now—165 millions against 115 millions now. In view of these findings, it would seem that this subject is worthy of consideration and requires constructive suggestions."

The report of the Reference Committee on Legislation and Public Relations called attention to the present tendency of attempting to determine the therapeutic value of medical agents by legislative action, and the Committee condemned the attempt to evaluate a therapeutic agent by legislative fiat,—by the Congress of the United States, or even by the House of Delegates of the American Medical Association,—and ended its report by saying: "Such evaluation can be made only by investigation and decision of experts having knowledge of that particular subject."

A peculiar situation was brought up at this meeting, namely, that the District of Columbia has no medical practice act and consequently quacks flourish in the capital of the nation. Dr. Roy of the District of Columbia presented a resolution requesting the Congress of the United States to enact a law covering the practice of medicine in the District of Columbia.

The Reference Committee on Hygiene and Public Health called attention, in its report, to the fact that the usual statement that maternal deaths in the United States were higher than in other countries, was misleading because the methods of collecting statistics vary, and an accurate comparison cannot be made until the different nations agree upon a uniform method. All present comparative statements of maternal deaths cannot therefore be accurate or dependable.

Considerable discussion was occasioned by a resolution presented by Dr. J. Richard Kevin of New York that the Physicians Home, Inc., established for the care of incapacitated physicians throughout the United States, be taken over by the American Medical Association,—but after a report by a Committee, appointed to investigate the question of indigent physicians in the United States, which found that the number of such physicians was so small that there was no demand for such a home, the resolution was rejected.

Much discussion was brought about by a resolution presented by Dr. Gorsline of Michigan, suggesting that the Board of Trustees be requested to prepare approved forms of letters, to be sent out by either County Medical Societies, or County or State Health officers, to promote to the public the value of periodic health examinations, which can be made by their own local physicians, who are members of the American Medical Association. It was finally decided that such form letters should only be sent out by the regular medical societies.

Another matter of peculiar interest to the physicians of Minnesota was the adoption of a resolution that the American Medical Association continue in its affiliation with the United States government, in the work being done by the National Committee for the prevention of blindness and the elimination of trachoma, much of which work is being done among the Indians of Minnesota.

It will be of interest to all physicians to note that the subscriptions to the Journal of the American Medical Association were increased 3,730 during the past year and that the average circulation is 89,742,—and also that the circulation of *Hygeia* is gradually increasing, but strange as it may seem, the subscription among physicians is still small. It is the duty of every member of the association to subscribe, and it will actually pay him to do so. One of the finest pieces of work that the Women's Auxiliary is doing is through its general and local committees, aiding in the circulation of *Hygeia,* especially in placing it in our public schools and libraries.

A matter of congratulation in the medical profession is the fact that the Index Medicus and the Cumulative Quarterly Index of the American Medical Association have been united under the name of the American Quarterly Cumulative Index Medicus, making it the best index of medical subjects in the world.

The commercial organizations which have been carrying on the periodic health examinations to their own great profit and to the detriment of the general practitioner, are still a menace, although one of the great life insurance companies, the John Hancock, has ceased its connection therewith. The House of Delegates urges that continued efforts be made to get the members of the American Medical Association to sever all connections with such commercial organizations, both as advisers and examiners. Such an act would result in much good to the profession and to the public. At the same time, the state and county societies ought to make increasing efforts to educate the public as to periodic examinations, to be made by their regular physician.

The perennial question before the House of Delegates, namely, the relation of the Volstead act to the prescribing of alcoholic liquor, was discussed in the executive session, and, we hope, settled for some time at least, by the following resolution: "Resolved that the American Medical Association declares its adherence to the principle that legislative bodies composed of laymen should not enact restrictive laws regulating the administration of any therapeutic agent by physicians legally qualified to practice medicine."

The last matter of business was the election of officers and the selection of the next place of meeting.

Dr. W. S. Thayer, Baltimore, was elected President.

Dr. Charles A. Elliott, Chicago, Vice President.

Dr. Olin West, Chicago, Secretary.

Dr. Austin A. Hayden, Chicago, Treasurer.

Dr. Fred C. Warnshuis, Michigan, Speaker of the House of Delegates.

Dr. Allen H. Bunce, Georgia, Vice Speaker of the House of Delegates.

Dr. Edward B. Heckel, Pennsylvania, and Dr. Rock Sleyster were elected to succeed themselves on the Board of Trustees.

Minneapolis was elected as the place of meeting in 1928.

Respectfully submitted,
WILLARD BURNAP, M.D.
HERMAN JOHNSON, M.D.
J. C. LITZENBERG, M.D.

President Braasch resumed the Chair.

PRESIDENT BRAASCH: I am sure we are all interested in the report. One of the most valuable and the greatest duty of a delegate is to bring back a report from the A. M. A. and to acquaint this body with the proceedings of that organization.

We have about an hour left for the remainder of the business so I will ask the other two delegates to be brief, if they will.

We would like to hear from Dr. Burnap.

DR. W. L. BURNAP (Fergus Falls): I wouldn't add anything to what Dr. Litzenberg has said. I appreciate acting as a delegate for this great body and did all I could to fulfill my duty. That is all I have to say. (Applause.)

PRESIDENT BRAASCH: I will next call on Dr. Christison. Dr. Christison, will you tell us a few words about the American Medical Association? Dr. Litzenberg has given his report and we would also like to hear from you.

Dr. J. T. Christison gave a brief report.

PRESIDENT BRAASCH: You have heard the discussion of the report, gentlemen, and also read the report. What is your pleasure in the matter?

DR. W. A. JONES (Minneapolis): I move its adoption.

The motion was seconded.

PRESIDENT BRAASCH: Are there any remarks or suggestions?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: We will next consider the report of the Committee on Medical School. This report has been published and you are all familiar with it and we will therefore not ask to have it read again.

We would like to hear from the Chairman of this committee who has done so much detail work, work of every kind, and submitted one of the best reports of any of the committees. We would like to hear from Dr. C. C. Kennedy, who will probably give us a few words on the matter.

DR. C. C. KENNEDY (Minneapolis): There comes to us now such statements as "Medical education is, after all, not medicine but education." A few things of that kind give you an idea as to what produces the difference of opinion relating to policy.

Just further, briefly, the Medical School Committee of the state association visited, as the report you have received shows, ten tax supported institutions in eight states. The policy of these tax supported medical schools was ascertained by contacts with officers of those schools and then an attempt was made to find out how that policy affected the practicing profession

in the various states. As our report showed you, we have the percentage of favorable and unfavorable attitudes on the part of the practicing profession toward the institutions in their respective states.

After consideration of this investigation the Medical School Committee at its last meeting, May 3, 1927, offered to this Association no resolutions, no recommendations, merely signing their names to what they term an opinion as follows: "After due consideration of its investigation of ten tax supported medical schools located in the states of Iowa, Indiana, Kentucky, Ohio, Michigan, Illinois, Wisconsin and Minnesota, and the attitude of the practicing medical men in these states toward their medical schools, the Medical School Committee of the Minnesota State Medical Association at its last meeting, on May 3, 1927, voiced the unanimous opinion that the responsibility for the policy and conduct of the tax supported medical school should be placed in the hands of men with a definite medical training and experience."

A brief summary of the information collected is herewith attached and it is signed by the members of the Committee. (Applause.)

REPORT OF MEDICAL SCHOOL COMMITTEE

A brief report is hereby submitted of the survey made in eight states visited by the Medical School Committee in July, 1926, of the tax supported medical schools and their attached hospitals. The report contains general information in regard to the University; the impression received from the contact with the dean, which impression in each instance was mailed back to the dean and duly confirmed by him; and the attitude of the medical men in each state visited toward the medical schools, their attached hospitals, and the various public health, welfare and other free medical service organizations.

IOWA

Iowa State University, Iowa City, Ia. Iowa City has a population of 22,000. The attached hospital of the University has 744 beds, and it takes county, per diem and pay patients from all parts of the state. The free patients are called staff cases. The cost of caring for county and clinical cases is $3.50 per day per patient. The hospital is operated at an expense of $1,500,000 per annum. The University has full time men in five specialties.

"IMPRESSION OF DEAN'S CONVERSATION" CONFIRMED SEPT. 4, 1926

Dr. L. W. Dean, Dean of the Medical Department, states that the policy of the school is to develop teaching and research work. He feels that this can be done only by getting men who are not commercialized and who are satisfied with a competence of from $4,000 to $7,500 per year, on a full time or part time basis; all work to be done in the University hospital, and the doctors are allowed offices in the hospital so that they will have no overhead expense. Some men are allowed as much as $25,000 annually for research in their department. He states that in this manner the greatest Medical Schools in Europe and America have been developed.

He claims that no friction between the medical school and the outside profession exists in Iowa City, and very little in the state, due to the fact that consultations are almost nil and private practices are not built up. He feels this is due to the present policy, which must continue or the plan will fail. Can assure no permanency, however.

New men are selected on recommendation of outstanding men in their respective fields.

Dr. Dean thinks that only full time men is the proper thing for the *University of Minnesota,* paid by the state or from an endowment fund. He feels that no medical school can succeed unless it has the good will and coöperation of its state medical association. Medical schools must avoid getting into competition with the profession, which it is easier to do in small towns than in large cities where he finds that consultation will be required and not as easy to avoid as in a smaller city.

ATTITUDE OF MEDICAL MEN IN IOWA

The state of Iowa has 2,301 members in its state association. This association has 95 component societies, ten of which declared themselves loyal to their medical school and attached hospitals and 25 declaring themselves against their activities.

Four societies declared themselves for the free medical service organizations throughout the state and 26 societies declared themselves against their activities as they are now conducted.

None of the societies declared themselves for the various clinics held in the different parts of the state under the auspices of the Farm Bureau. This activity was generally condemned in Iowa.

INDIANA

Indiana University School of Medicine, Indianapolis, Ind. Indianapolis has a population of 315,000. The Medical School has for its teaching hospital the John Long and James Whitcomb Riley Hospitals. These hospitals take pay, county and free patients. Full time teachers in this institution are preclinical. The University has 20 beds for private patients.

"IMPRESSION OF DEAN'S CONVERSATION" LETTER—AUG. 11, 1926

In reply to the impression sent Dr. Chas. C. Emerson, Dean of the Medical School, the following letter was received which is quoted verbatum.

"I thank you for your kind note of August 5th. It was a pleasure to meet you here and we only wish that we could have done more to entertain you.

"Of course in a conversation such as we had it was very difficult to more than touch on any one of the problems discussed, and so there is always danger that we did not make ourselves clear in some essential points. I take the liberty, therefore, to enlarge on two or three of the topics discussed.

"We feel that a state university should interest itself in the medical and surgical care of the sick at least in so far as this is necessary for the education of the medical students. Whether or not a state university should go farther than this is another question open to discussion, but one which should not be mixed

up with the preceding question. For illustration, we feel that any taxpayer has a perfect right to demand the professional service of a state university medical faculty, and, if he demands it, that we cannot refuse to grant it. So the courts would rule. But if he does receive it the rates charged him should be at least the standard rates for such service in force in that community. If the faculty can do better than the local profession then they should charge more. One definition (of course not the whole definition) of state medicine is 'professional service provided by the state and paid for in part at least from taxes rather than by the patient who could pay for it if he wished to.' As I remember it we did not discuss this aspect of the question, and yet it belongs with the whole.

"I emphasized the point that the medical and surgical education of future practitioners should be under the control of men with wide and successful experience in the practice of medicine. You will remember, however, that I added that it was these clinical teachers who, up to 1900, had practically wrecked American medical education and made it necessary for full-time laboratory men to reorganize our medical schools and to run them as they are now doing. Through their influence another generation of clinical teachers will doubtless arise who can carry on this education at a higher level than now. The clinical men have themselves to blame for the present state of affairs, and must prove themselves competent and trustworthy before education can again be placed in their hands. Personally I cannot conceive of a medical school reaching very high levels of excellence unless it is in the charge of men who have proven successful in that field of activity for which they are training the medical students. Certainly I am not all willing to grant that the clinical teachers occupy a slightly lower level in the world of pedagogy than do the full-time laboratory men. If they do it is their own fault. Europe was able to train clinical supermen. Why should not America?

"And, last, it is certainly the duty of the state universities to train medical students, and they should do it in the manner which they consider the best. To do this they must, of course, have the full support of the practicing physicians of the state, and therefore should welcome any suggestions concerning their fulfillment of this public function. And yet there is a warning to give here. Medical education must always be a decade or thereabouts ahead of the knowledge of the practicing profession, and the practicing profession in expressing itself on a subject like this will express, not the opinion of the leaders of the profession, not the opinion of those best trained or with clearest vision as to the future, but must of necessity express the opinion of those who personally feel the necessity of aid or protection from their society. The best men will have only an academic interest in the matter. Those who demand state society action are men who are feeling competition severely and therefore are seeking any means which will in any way improve their own professional progress. For this reason state medical schools are being made the target of thoroughly unjust attacks and are held responsible for much in the medical world for which they are not at all to blame. The progress of medicine is rapid, and the average doctor would like, if possible, to hold practice stationary at the level for which he was trained, and to combat those rather rapid innovations which make it necessary for him to reeducate himself about every decade. It certainly is a conservative point of view which a medical society is likely most forcibly to express, and this will usually be out of sympathy with good education.

"You are tackling this subject in the right manner. The investigation which you are making is likely correctly to evaluate this tendency, and your society promises to make a fine contribution to this subject. We certainly are tremendously interested in the conclusions which you gain, for they surely will help us all."

ATTITUDE OF MEDICAL MEN IN INDIANA

The State of Indiana has 2,565 members in its State Association, which association has 81 component societies. Five of these societies declared themselves for the program of the Medical School and its attached hospitals and 16 against the program.

Three of the societies declared themselves for the free medical programs of the different organizations throughout the State and 20 against the same.

Only two declared themselves for the State Board of Health activities.

KENTUCKY

University of Louisville, Louisville, Ky. Louisville is a city of 405,000. This is a municipal university and the attached hospital is a municipal institution. The hospital receives city and county patients and no private patients. The full time teachers here are preclinical teachers. The clinical teachers are part time and part volunteer. The hospital has 500 beds.

"IMPRESSION OF DEAN'S CONVERSATION" CONFIRMED SEPT. 20, 1926

In the absence of the Dean, Dr. Stuart Graves, Dr. Irvin Abell, Professor of Surgery in the Medical School, was interviewed. Dr. Abell states that the Medical School has no teaching affiliation with any hospital in the city other than the Louisville Public Hospital, which, insofar as professional service is concerned, is under its control. While one may always find criticism of hospital and dispensory service, he does not think that the profession as a whole has any feeling toward the medical school. He is greatly interested in the distribution of doctors to rural districts.

ATTITUDE OF MEDICAL MEN IN KENTUCKY

The state has 1,858 members in the Kentucky State Medical Association with 98 component societies, 5 of which declared themselves for the University and its attached hospital and 3 against it.

One society declared itself for the free medical service organizations' programs, and 3 declared themselves against them.

Two of the societies were for the activities of the State Board of Health and one against them.

OHIO

University of Cincinnati, Cincinnati, Ohio. Cincinnati is a city of 400,000. The University and its attached hospital are municipal institutions. The hospital has 800 beds. Free, county and pay patients are accepted. There are both full time and volunteer clinical teachers in this institution.

"IMPRESSION OF DEAN'S CONVERSATION"

Dr. A. C. Bachmeyer, Dean of the University of Cincinnati, does not believe that even the full time professors in a teaching institution should be absolutely restricted in their activity, and it is the plan of this institution to build a Staff Hospital close to the Cincinnati General Hospital so that the staff of the General Hospital can conduct their private work nearby. He thinks that if a clinical man conducts his department properly, he should be allowed freedom to practice otherwise. He does not believe that the municipality or state should collect the fees for doctors' services even though they may be on full time paid by the State or municipal teaching institution.

(In reply to the above, Dr. Bachmeyer wrote the following letter which is dated September 8, 1926.)

"I am returning herewith the notice pertaining to your visit to this institution received with your letter of the 2nd.

"I believe that there is very little reason for further comment, if you will bear in mind the fact that I regard the term 'full time' as a rather vague term, not properly defining the situation. As interpreted by us the term has never meant that the professor is required to devote his entire time and efforts to the college. We have rather interpreted it to mean that for a 'reasonable compensation' a professor has agreed to make teaching his first responsibility and we require of him that he shall devote sufficient time to his college duties to develop as highly efficient a department as possible, regardless of the amount of time per day which it may be necessary for him to use in accomplishing this purpose. We have fully recognized the fact that it was impossible for us to obtain the services of men of high calibre, such as we desire, for the compensation which it has been possible for us to pay, who would devote their entire time to college work.

"While our professors are not permitted to conduct an office away from the hospital, they are permitted to do consultation practice without definite restriction, except that such practice must not interfere with college duties."

Ohio State University of Columbus, Ohio. Columbus has a population of 285,000. It has a 350 bed hospital which takes care of free, county and pay patients. The medical faculty consists of about 50 clinical men. The rest are pre-clinical. They have 5 full-time men. Five men have offices in the hospital completely equipped by the hospital. Their practice is not limited to their University position.

"IMPRESSION OF DEAN'S CONVERSATION"
CONFIRMED SEPT. 9, 1926

Dr. Campbell, Dean of the Medical School, was absent from the city, so interviewed Dr. S. A. Hatfield, superintendent of the University Hospital, and the impression of our conversation was as follows:

Dr. Hatfield believes that the value of the teachers in the clinical years to the Medical School is greater by their having contact with outside patients. The surgical division is provided with 40 private beds and the medical division with 30 beds for the care of private patients. A properly functioning Social Service Department now being organized will correct the antagonism from the general practitioner.

ATTITUDE OF MEDICAL MEN IN OHIO

The Ohio State Medical Association has 4,648 members, which includes 92 component societies, 8 of which declared themselves loyal to the University and 12 against the present program.

Four of the societies declared themselves for the free medical service organizations' program and 18 against the way they are conducted at present.

Three of the societies declared themselves for the program of the State Board of Health and 18 against them.

MICHIGAN

The Michigan University Medical School and Hospital, Ann Arbor, Michigan. Ann Arbor is a town of 20,000. This new hospital cost the State of Michigan $10,000,000. They accept county, free and pay patients and patients who are the charges of the State. The hospital has 1,000 beds. There are full time and volunteer teachers in this institution.

"IMPRESSION OF DEAN'S CONVERSATION"
LETTER SEPT. 9, 1926

In reply to the impression sent Dr. Hugh Cabot, Dean of the Medical School, the following letter quoted below was received:

"I have taken the liberty of revising your notes on what I said, chiefly in the direction of amplifying them. I am sure that they do not depart at all from the essence of our conversation.

"You ask me to write you an outline of our policy. This is, of course, a difficult thing to do since at best I can only state in general terms the future developments which seem to me desirable without predicating their acceptance by the necessary authorities.

"Briefly my view is as follows: Our purpose here is to provide a center for medical education which will be thoroughly high grade in every particular. The development of the University Hospital must at all times be such as will fit into this plan, and I do not think that the University Hospital can wisely serve any other purpose. Obviously, the hospital provisions must be sufficient to give clinical opportunities which are entirely adequate, and it has been for some time my opinion that roughly speaking one thousand beds adequately allocated to the different departments of medicine is necessary for satisfactory teaching. In addition there must be available a sufficient dispensary clinic to allow students to see ambulatory conditions in sufficient number. Quite obviously the development of such a clinic in a country town with a population of about twenty thousand is a very different thing from a hospital similarly arranged in a large city. It has not been sat-

isfactorily shown that with proper legal provisions such a clinic can be developed in a small town. The present legal provisions by which indigent patients may be sent to the hospital by the judges of probate at the expense of either state or the county, a plan which was first developed here in Michigan and subsequently adopted in Iowa, has worked very satisfactorily. In addition, such a University Hospital should make provision for patients known here as 'Affidavit Patients' to indicate that they are able to pay hospital expenses, but not physicians' fees. This provision must clearly be carefully watched since it is and always has been open to abuse. It is, however, not different from the provisions made by other hospitals all over the world.

"In regard to the acceptance of private patients on any basis, there is, I think, a principle involved which should not be overlooked. It would be an unsatisfactory policy from the point of view of development of the best type of clinical teaching to limit the teachers to the care of indigent patients. If this is done, there is apt to develop, as it has developed in foreign clinics to a notorious degree, an atmosphere concerning the patient which is not that which should be taught the students. This system, I believe, inevitably develops habits of mind which are incompatible with the best ideals of the practicing physician. It seems to me, therefore, to follow that the clinical teachers, more especially in the higher grades, should not only be allowed, but encouraged, to see all classes of patients with a view to keeping closely in touch with the world. This may be carried out in several ways, two of which are, either to allow these men to carry on private practice as is readily possible in large cities, or to allow them to receive at the University Hospital a limited number of private patients. The latter method seems to me best suited to avoiding two dangers: one, a very undesirable waste of time, and, second, what might be regarded as unfair competition with the medical profession. The first objection is much more serious here than in a large city since the amount of time necessary for private practice readily becomes excessive and withdraws these men from their hospital work to an undesirable extent. I think the principle of full time in clinical departments is absolutely essential to the best development of these departments since I believe the day has gone by when the men of professional rank can treat their clinical work in a casual way. 'Full time' should not be regarded as having any particular formula, but merely the devotion of a large proportion of the professors' time to teaching research and organization. If the method of allowing them to have pay patients at the University Hospital is adopted it is readily possible to see that their time is now wasted in traveling and the many time consuming things which occur in private practice and also that the proportion of their energies devoted to this side of the work is properly limited so that their competition can be kept at a reasonable level. I believe in this way the medical profession would be much better protected than under the other system where there inevitably develop private hospitals, as two have developed here, which would very largely distract the attention of these men.

"The possible objection that there might be built up in this way a large private clinic under the auspices of the University is an objection which can be avoided through the authority of the Board of Regents. Under no other system is there an equally powerful body which can effect practically absolute control. This seems to me the best guarantee of orderly development and the ideals of university life are likely to curtail dangerous developments more certainly than any other method.

"It is quite clear to me that in the proper development of the principle of 'full time,' no formula can be developed which is suited to many different medical schools. The local situation in regard to economic, financial and social development must always be taken into consideration. If those who are chiefly concerned with this development will avoid formulæ and constantly bear in mind their two objectives, one, the development of medical teaching, and, two, the sound maintenance and development of medical practice, they will avoid the obvious pitfalls in this road.

"In regard to Students Health Service, I have no very clear opinion. This service here is in no way connected with the Medical School and consequently I have not had to worry about it. The principle that students' health should be a proper source of concern to the University seems to me sound. The further principle that lack of finances should not interfere with the proper care of students' health also seems to be sound. Sound habits in the care of health can and should be taught and these habits can best be taught by practice and not by preaching. The plans now in effect for caring for the health of students seem to me probably sound, though I can see ways in which I think they could be improved and in which the danger of pauperizing students, which is perhaps sometimes valid, could be more certainly avoided."

Detroit College of Medicine and Surgery, Detroit, Mich. Detroit is a city of 1,500,000. The college is under the Board of Education of the City of Detroit. The main building has a receiving hospital, which is the only true municipal institution in Detroit, and houses 565 patients. All patients are free. It is the clearing house for accident cases. A great deal of accident work and general surgery is done here. This school has full time men in the maternity and internal medicine departments.

"IMPRESSION OF DEAN'S CONVERSATION"

In the absence of the Dean, Dr. W. H. MacCraken, interviewed Dr. Inga Werness, Registrar of the Medical School, who takes the Dean's place in his absence. Dr. Werness feels that the Detroit College of Medicine has the support of the medical profession of the city and state. The full time teachers, preclinical or clinical, are not entirely restricted to their teaching.

ATTITUDE OF MEDICAL MEN IN MICHIGAN

Michigan has 3,192 members in the State Association with 55 component societies. Four of the societies declared themselves for the present program of the medical school and its attached hospital, and 16 against it.

One society declared itself for the free medical service program of the various organizations and 15 against it.

Only 1 society declared itself for the Board of Health program.

ILLINOIS

University of Illinois, College of Medicine, Chicago, Ill. Chicago has a population of 3,000,000. The University's attached hospital is the Research and Educational Institute of 400 beds with its large free dispensary. It also uses the Cook County Hospital and Augustana Hospital for its teaching purposes. There are full time and part time preclinical and clinical teachers, some three-fourths time and many old volunteer clinical type of teachers in this institution. The budget is $633,000 annually. The patients in the Research and Educational Institution are charity patients, about 70 per cent of them being negroes.

"IMPRESSION OF DEAN'S CONVERSATION"
LETTER SEPT. 14, 1926

Dr. D. J. Davis, Dean of the University, does not believe in the full time idea. Thinks that even preclinical men are entitled to outside contacts. He believes that the State of Illinois is obligated to educate doctors to take care of the citizens and also to develop research institutions. Out of his many clinical teachers, volunteer or otherwise, very rarely a lecture is missed and he is always notified in advance. (In confirming the above, Dr. Davis wrote the following letter):

"I have a letter dated September 3 from you enclosing a statement of impressions which you received from our conversation July 19 last concerning medical matters in general. I should like to restate some of your sentences. You say in your first sentence that I do not believe entirely in the full time idea for either preclinical or clinical medical teachers. I believe in the full time idea for heads of departments of the preclinical sciences. I think that for subordinate positions in such sciences that work might be to some extent carried on by men who have other contacts, such as hospital positions, practitioners, etc. In sentence number two, this should read 'providing this does not interfere with their *University work.*' One of the great difficulties with outside contacts is that the *productive work* of the teacher is often apt to suffer though he may carry on his teaching very well. This, of course, is a serious matter, so far as research work is concerned, and Universities must of course be engaged in this type of work. I feel that the important positions in both clinical and preclinical branches should be filled with the men who in their outside contacts should be doing work of a consulting character very largely. For example, in pathology, the important men in this department should not be engaged in ordinary detailed diagnostic work. They may very well be permitted to engage in consultation. I do not wish to give you the impression that I believe in going back to conditions that existed years ago when practically all medical work in the colleges was carried on by practitioners of medicine. This would be an impossible situation today. Men who are connected with universities should take very seriously their university positions and should in no way permit their outside interests to interfere with their devoting a considerable part of their time to university work, both teaching and productive research. With some exceptions, I think that men both in preclinical and clinical branches should in their relations to the university devote not less than about one-half of their time to university work."

ATTITUDE OF MEDICAL MEN IN ILLINOIS

Illinois has 7,609 members in their State Association with 98 component societies. Six societies expressed themselves for the medical school program and 12 against it.

Two societies expressed themselves for the free medical service organizations and 23 against them.

Three societies were agreeable to the activities of the State Board of Health program and the balance against them.

WISCONSIN

The Wisconsin University, Department of Medicine, Madison, Wis. Madison is a town of 50,000.

The Wisconsin State University General Hospital and Medical School is a State University and Hospital. The entire student body of the Wisconsin University, including the summer session, numbers 8,000. The Medical School is a modern institution.

The Wisconsin General Hospital has 430 beds, 70 per cent of which are for free patients, 20 per cent for per diem patients and 10 per cent for pay patients. Free patients cost the state $4.75 per day. They are made up of certified county patients and Board of Control patients who come from different state institutions and for whom the state is responsible. All patients sent to this institution are sent there by doctors.

All the preclinical branch teachers are full time men paid by the medical school budget. In the clinical branches there are three full time men in surgery, three in medicine, one in pathology and one in pediatrics. These men are paid from the budget of the medical school and from the fees of their own work. The outside activities of these men are limited only by their teaching. Of the three full time men in medicine, one does not have an outside office. The full time men receive salaries as follows, $7,000, $6,000, $5,100. Dermatology and part time men receive $1,000 per year and the assistant, $600. Pathology is on the state and general budget.

The hospital has twelve interns and six residence. The full time men receive salaries of $7,000, $5,000 and $3,000. These men have outside offices. Part time men in the department of surgery in orthopedics, plastic surgery, obstetrics and general, ear, eye, nose, and throat receive salaries running from $600 to $1,500 a year. In pediatrics they have one full time man at $3,000 and a part time man at $2,750.00.

"IMPRESSION OF DEAN'S CONVERSATION"
CONFIRMED SEPT. 29, 1926

Dr. Bardeen does not believe teachers should be restricted as to consultation but ought to do all hos-

pital work in the University Hospital and keep the fees of patients able to pay for work of specialists. Feels that the type of man selected for teaching and research should be one who would not commercialize the University teaching position and would command the trust of the outside profession.

Dr. Bardeen thinks that the preclinical man should not head the clinical departments.

He thinks that close relationship should be maintained between such departments as pharmacology and genito-urinary for example so that the clinical branch can apply developments of preclinical branch, as he finds that the clinical man must interpret the research findings to the profession. He finds, as a rule, that the clinical man is asked to read papers in preference to the preclinical man.

He feels that both branches must be in position to avoid the interference of outside contacts or practice so that ample time can be given to the research problems at hand.

Dr. Bardeen believes that the German system of allowing preclinical teachers to augment their University salaries by charging students helps to equalize financial incomes of the preclinical men and clinical men, but doubts if this system is likely to be adopted in America in the near future. He believes that the medical teacher should have all types of patients.

Dr. Bardeen thinks that the method of the Wisconsin General Hospital, of having all of its patients come referred by the doctors in the state, is resulting in the outside profession's support.

The attitude of the profession in general, when the clinical work was established at the University, was one of waiting to be shown. Some men were strong supporters, some inclined to oppose. On the whole, he believes the feeling of friendly confidence has been rapidly growing.

Dr. Bardeen thinks that the state is obligated to care for the health of the people if it intends to keep the health of all good. This applies especially to the Student Health Service where the greater part of the full time doctors' time is spent on education and preventive medicine.

ATTITUDE OF MEDICAL MEN IN WISCONSIN

The State of Wisconsin has 1,959 members in its State Association with 52 component societies. Five of the societies declared themselves for the medical school and its attached hospital and six against their program.

One society declared itself for the free medical service organizations and 12 against them.

Only 1 society was agreeable to the activities of the State Board of Health program.

MINNESOTA

The University of Minnesota, Minneapolis, Minn. Minneapolis has a population of 500,000. The medical school's attached hospital is known as the Minnesota General Hospital and has 250 beds. It takes free, county, per diem and the charges of state institutions and pay patients. It has full time and volunteer clinical teachers.

"IMPRESSION OF DEAN'S CONVERSATION" CONFIRMED APRIL 26, 1927

Dr. Lyon advised that the only official rating of medical schools that he knows of at this time is that of the American Medical Association, which rates the Medical School of the University of Minnesota as "Class A," which is the highest rating.

He thinks that a pay patient clinic in a tax supported institution is no more competition for the practicing profession than any other kind of highly developed clinic in the same locality; in fact, less competition, as the full-time doctors on the faculty have no down-town offices.

Dr. Lyon feels that he should have about 50 beds for pay patients and that all full time men in each department, full time clinical teachers and the others of lower rank in the respective departments should be allowed the privilege of pay patients at the University Hospital. He has no objection to other competent men bringing their cases to the University Hospital so far as facilities permit, but this proposal has never come before the Board of Regents.

He thinks that full time men, even though adequately paid, should have a limited privilege of consultation for the purpose of keeping in touch with the profession.

650 beds or more is the size of the teaching hospital desired at this time.

With good support from the practicing profession, Dr. Lyon thinks that plenty of clinical material can be obtained.

He thinks that perhaps some method might be devised wherein reputable physicians and surgeons may keep in some sort of touch with their patients in the teaching hospital. Such physicians are always welcome at the hospital.

Dr. Lyon would as soon as possible develop four departments on an approximate full time basis: Pediatrics, Surgery, Medicine, Obstetrics and Gynecology.

Feels that any man choosing a University career should be satisfied with the compensation that goes with it and should avoid building up a large private or consultation practice.

In regard to basing the salaries on the customary professorial rank, Dr. Lyon feels that larger salaries would have to be paid to clinical teachers of medicine and surgery as there is a greater demand for them and their earning power is more than that of the other professors in the various departments of the University. He would recommend salaries from $9,000 to $12,000, ranging downward, for two or three assistant professors.

He feels that the above is also true to some extent in cases of teachers of sociology and some other branches where there is a large outside call.

The University should provide some kind of old age provision for its professors on some sort of an insurance basis contributed to by both the institution and the professors during their active years. This would provide a feeling of security for the teacher so that he can give his best efforts to the school.

ATTITUDE OF MEDICAL MEN IN MINNESOTA

Minnesota has 1,755 members in its State Association with 36 component societies. Two of these societies declared themselves for the medical school and its attached hospital and 17 against the program.

There were no declarations for the activities of the various free medical service organizations, and ten societies declared themselves against their programs.

Only one society declared itself for the activities of the State Board of Health Program.

SUMMARY

A brief summary is hereby submitted of the investigation made of the attitude of the component county medical societies of eight states towards the activities of the medical schools and their attached hospitals in their respective states, the free medical service program and the state and federal health activities as well as the Sheppard-Towner Act. Letters were sent to the presidents and secretaries of these societies, and their replies were as follows:

State of	Number Members of State Medical Assn.	Number Component County Societies	Number Official Replies Received	ATTITUDE OF COMPONENT COUNTY MEDICAL SOCIETIES on activities of: Medical School and Hospital For	Medical School and Hospital Against	Free Medical Service Program For	Free Medical Service Program Against	State Board of Health For	State Board of Health Against
Michigan	3,192	55	22	4	16	1	15	1	6
Illinois	7,609	98	30	6	12	2	23	3	
Wisconsin	1,959	52	17	5	6	1	12		
Ohio	4,648	92	22	8	12	4	18	3	18
Kentucky	1,858	98	12	5	3	1	3	2	1
Indiana	2,565	81	29	5	16	3	20	2	1
Iowa	2,301	95	39	10	25	4	26		16
Minnesota	1,755	36	12	2	17		10	1	
	25,887	607	182	45	97	16	127	12	42

Official replies were received from 30 per cent of the letters sent out. As the above report indicates, 60 per cent of the official replies declared themselves against the present program of their medical schools and attached hospitals for the following reasons:

1. Because of the severe and unjust competition of the medical school hospital with the practicing profession.

2. Because of the tendency towards state medicine.

3. Because of the resulting pauperization of the public.

4. Because of the excessive expense to the taxpayer of centralizing the medical care of the indigent poor.

Twenty-four per cent of the official replies declared themselves in favor of their medical schools and attached hospitals in terms of loyalty.

In regard to the free medical service program, 70 per cent of the official replies denounced the programs as carried on by the different organizations and 9 per cent of the replies were in favor of the same.

Twenty-two per cent of the component societies declared themselves against the state and federal health activities including the activities resulting from the Sheppard-Towner Act and 7 per cent were in favor of the same.

This investigation was completed December 22, 1926.

After due consideration of its investigation of ten tax supported medical schools located in the states of Iowa, Indiana, Kentucky, Ohio, Michigan, Illinois, Wisconsin and Minnesota, and the attitude of the practicing medical men in these states toward their medical schools, the Medical School Committee of the Minnesota State Medical Association at its last meeting on May 3, 1927, voiced the unanimous opinion that the responsibility for the policy and conduct of the tax supported medical school should be placed in the hands of men with definite medical training and experience.

A brief summary of the information collected is herewith attached, setting forth, state by state, the medical schools as they appeared, the policy of each institution as stated by the dean, and the attitude of the practicing profession toward their medical school insofar as it could be ascertained.

The information collected is on file in the office of the State Medical Association for perusal.

H. M. Johnson, M.D., Chairman.
Claude C. Kennedy, M.D., Secretary.
George Douglas Head, M.D.
George Earl, M.D.
E. Starr Judd, M.D.
W. L. Burnap, M.D.
Arthur N. Collins, M.D.

Dated May 6, 1927.

President Braasch: Gentlemen, you have heard this report read as well as heard the remarks on this report. What is your pleasure in the matter? A motion to adopt it or reject it is in order.

Dr. W. A. Jones (Minneapolis): I move its adoption.

The motion was seconded.

President Braasch: Are there any remarks, additions or criticisms to be made?

Dr. W. L. Burnap (Fergus Falls): Once in a while a man does a real fine piece of work, and I know of no better time to let the House of Delegates know that Dr. Kennedy did a great piece of work in looking up this medical school educational matter. If you could see the amount of work he did and the amount of material which is on file in the Secretary's office, you would know that Dr. Kennedy has done a very fine piece of work. (Applause.)

President Braasch: I am sure we all agree.

President Braasch: Are there any further remarks, criticisms or suggestions to be made?

The motion was put to a vote and carried.

President Braasch: We have another Committee to hear from, the report of the representative to the annual congress on medical education, medical licensure, public health and hospitals. It has already been published in Minnesota Medicine (Vol. 10, p. 240) and you are doubtless familiar with it so it is not necessary for it to be read. Dr. Tuohy, the representative, is with us and we would like to hear from him on any additional remarks or suggestions he would like to make.

Dr. E. L. Tuohy (Duluth): I am indebted to the officers of the State Association and Dr. Braasch for the invitation to attend that meeting.

I had a little previous personal knowledge of the enormous amount of work being carried on by the American Medical Association and the very effective organization they have to assist in carrying it out. If you will read the report there may be matters of interest in it and in the very few minutes that I would take your time I would call attention to several headings.

First, it is becoming entirely clear to all educators, and to most of our component medical societies, that medical education is not something restricted to the student in his undergraduate period.

It is not entirely clear, under the second heading, that our medical societies as yet have found the most ideal method of furthering the instruction of the rank and file of the profession. Whether large meetings such as are held by the American Medical Association or those held by the Interstate Assembly are as effective as they might be is open to considerable question.

There is grave question on the part of the best medical educators in the country as to what should or should not be included in actual medical teaching. As is usual on two sides of an issue, or many sides of an issue, some hold that many things now taught in the medical schools should be relegated back to the primary or secondary schools. There are others, with whom I hold, who think the exact reverse should be done, to some degree at least.

Leading to the next heading that I have given some thought to and have had more or less to say in the past year and a half as applied to our own medical school, for which we need offer no excuse or apology, it seems to me we should encourage some of the primary branches, such as physiology, and work more closely in the teaching of such subjects in the medical schools than is done at present. We have already witnessed how it can be done in the extraordinary and effective coöperation between pathology and bacteriology in the actual teaching of medicine.

I took the occasion, on this trip I made, to go to the various schools in Chicago and I found they were no better off regarding physiology than we are in Minnesota. In Western Reserve a very strong physiology department is coming in much closer contact to the actual student in his teaching than in most places.

I think a little encouragement from the State Association and from those on the outside would make it possible to develop what we may call clinical physiologists because the people who come to us are not always sick with disorders that are, strictly speaking, changes pathologically or anatomically, but a large proportion of the people we see are suffering from functional or perverted physiological states.

A step has already been made and I would like to see the time when some of the splendid work, such as is done by the pathological department in Minnesota, in physiology or in chemistry, might be brought directly over into our meeting.

On the next order I would point out that anyone who has a day in Chicago should go over and go through the American Medical Association building. Those men over there are working like Trojans, as we say. They have a wonderful lot of information about you and me. They are rapidly building up a system that checks every student from the time he enters medical school until he quits practice or dies.

In that very order, if you will read this report and look into the standardizing efforts of the American Medical Association, you will come to see that no hospital at the present time can be an end in itself. If it is not a part of the education of students, undergraduates, it is a part of the education of the practitioner in his graduate work, and that fact is perfectly clear to these men as it has been to educators for a long time that a hospital cannot be a success that does not attempt to coördinate its work; and there is no better coördinating agency so far devised than accurate pathology.

Gradually leading up to what is obvious, that without autopsies carefully made and equally carefully studied, a hospital is not a good place for an interne and not an efficient place for a practitioner. We have had the ruling recently that no hospital offering less than ten per cent of autopsies of those who die will be accredited for an interne.

We cannot all be Joslyns and secure autopsies by his ingenious method. In utter frankness he goes to his patient, probably a diabetic, and says, "My statistics show that I can perform two operations to promote your comfort. Will you not grant me the opportunity to have one operation after you die to secure comfort for others? Will you not, after you are through with your pancreas, let me have it?" Nearly 100 per cent of his patients permit an autopsy.

It is clearly indicated by all the educators that we are not going to get this critical, this positive method of advancing our standard and our accuracy in hospitals and in practice unless something is done to take away the fear and the horror the public has of autopsies.

In this regard the profession is not nearly as alert as it should be. Altogether too many physicians are doing what I found down in one of our largest hospitals in Minnesota, after the pathologist has secured permission to hold an autopsy the patient's surgeon said, "No, we do not care to have an autopsy."

I know nothing better than to go on record to encourage medical education throughout the state and throughout the hospitals by devising some method of popularizing autopsies. (Applause.)

PRESIDENT BRAASCH: What is your pleasure in the matter of this report?

DR. H. M. WORKMAN (Tracy): I move its adoption. The motion was seconded.

PRESIDENT BRAASCH: Are there any remarks, suggestions or criticisms?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: We have with us now Dr. Pearce of the Committee on Hospitals and Medical Education. The report has been published and has been read by all of you so it is unnecessary to read it again, but we would like to hear from him briefly on any suggestions or additions he would care to make on this subject.

We all recognize how much good work he has done, how thoroughly, and the pamphlet the Committee has published is, without exception, one of the best things published on this subject. We would like to hear from Dr. Pearce. (Applause.)

DR. N. O. PEARCE (Minneapolis): Mr. Chairman, Members of the House of Delegates: We have only two problems in this extension work that I think need your time and discussion, and the first one is that we still have only, I might say, less than half of all the county organizations who have appointed committees on medical education. We can't work with a local society unless we have somebody in that organization who has been appointed by the society to work up local sentiment. That is one thing I am anxious to do, have the delegates take some action so that we can go back to the local societies and impress on them the necessity of getting those committees appointed and then when the committees are appointed having them get in touch with the state committee so we can help them get some of this work organized in their own society if they want to.

The other thing is in this report where I discussed the possibility of several different types of extension work. I think the one we are using in Minnesota is the most economical and probably the most practical for this state. So far in the work we have been doing we are not spending a penny of the State Association funds. The money being spent and the material furnished is being furnished by the Extension Bureau of the University and these courses are carried on in coöperation with the Medical School in the Extension Division of the University.

However, there is some question in my mind whether it would not be wise to have an appropriation so that we could, for part of the year, have someone in the field who could go about to the different organizations and get up some interest and help to organize these courses. In the East, where these courses have met with success it has been very largely the result of field agents working practically all the time keeping up interest in the local societies and getting them organized.

I think if the House of Delegates would take some action to speed up the local societies to get their committees appointed and get on those committees fellows really interested in doing something of this kind, it wouldn't be necessary for us to put a man in the field. I believe the thing is good enough to go over without all of that work. However, I want to submit that to you for discussion. (Applause.)

REPORT OF THE COMMITTEE ON HOSPITAL AND MEDICAL EDUCATION OF THE MINNESOTA STATE MEDICAL ASSOCIATION

June 1, 1927

The committee has principally occupied itself with the promotion of Extension Education for the general practitioner and has also in coöperation with the Committee on Hospital and Medical Education of the American Medical Society been instrumental in having Eitel Hospital of Minneapolis accepted as a registered hospital for the training of internes. One other hospital is now under consideration but so far the investigation has not been completed.

Relative to the work on Medical Extension, your committee has with considerable effort and in coöperation with the Extension Division of the University, compiled a little booklet covering in detail the plan for Extension Post Graduate Courses for practicing physicians. The entire expense of printing this book has been borne by the University. Some expense was incurred by the State Medical Society in sending out letters and postal cards while compiling the list of instructors. Other than this, no expense has been incurred by this committee.

GENERAL PLAN

The plan of operation which has been adopted contains the following features. All plans, however, are subject to alteration to suit the needs of local organizations.

1. Ordinarily the courses are organized and conducted through the Committee on Hospital and Medical Education of the local medical society, where such committees have been appointed; and where such committees have not been appointed, they should be appointed at once. Where it is not practical to oragnize a course under the auspices of the local society, any group of physicians, who are members of the state association, may organize themselves according to the same plan as outlined for the county society. One man should be selected as secretary or local manager; he

should conduct the correspondence and make all local arrangements.

2. The courses are planned to meet one day each week for as many weeks as the class may elect. The time is to be occupied either with morning clinics and afternoon lectures, or afternoon clinics with evening lectures. Normally each clinician may be expected to hold a clinic occupying from one to two hours, and to deliver a lecture or lantern slide demonstration occupying about the same time. Either one or two subjects and lectures may be had for each meeting.

3. It is not desirable to plan for less than an eight-week program, which would mean sixteen subjects with two lecturers, or eight subjects with one. The class may exercise the privilege of selecting subjects and instructors from the list which is found on page 4. Should there be some local man who is desired for some subject in the program, this can be readily arranged.

4. The cost of each course can be approximately computed by ascertaining the round trip railroad fare and ordinary traveling and living expenses from the home of each instructor selected, adding a slight overhead for the administrative work of the Extension Division. The instructor may come by train, bus, or his own automobile, but the expense is figured on the basis of the railroad fare. It is understood that the instructor serves without compensation.

5. If the course can be arranged for two adjacent centers on consecutive days with the same subjects, the cost will be considerably reduced.

6. It is the duty of the local center to provide a place for the clinics and lectures, and to see that the necessary clinical material is provided. The responsibility for furnishing the necessary clinical material is on the local center. Directions will be sent setting forth clearly the preparatory work that is expected on patients before they are presented for the clinic. When a stereopticon is needed, the local center is expected to provide it.

7. When the local committee have decided upon the number of days and subjects, and have completed registration for the class, the committee may select the day of the week, and the hour at which they wish the clinic or lecture to commence. It is advisable that arrangements be made so that the instructor will be on the ground at least two hours before the time for the clinic so that he may go over cases with the local men before attempting to present them to the class. Plans should always be made with an eye to the arrival and departure of trains.

8. In the printed list of instructors, it will be noted that there is a very brief outline of the subjects to be presented. Some instructors' work is such that they could not be expected to conduct a clinic, the subject being such that it lends itself only to didactic instruction. It should be noted that in all cases where the instructor is prepared to give a clinic, that fact has been noted under his name.

Each instructor has agreed to file with the Extension Division of the University of Minnesota a detailed outline of the subject which he will present, and such outlines will be available for the committee should they wish to study the subject further before making a selection. Furthermore, when the course is actually under way, outlines for each instructor will be sent on ahead so that each member of the class may have one on the subject to be presented.

9. As soon as the subjects for the course have been selected, the local committee should forward the list to the Extension Division of the University of Minnesota, indicating first, second, and third choice, and the exact cost of the course will be computed. Upon receipt of this, the local committee should collect the required amount from the class and send it in to the Extension Division. Payment in full is expected before the course begins. All checks should be made payable to the University of Minnesota.

10. If a consecutive or sequential course on one general subject by one man is desired, it is probable that it can be furnished. Special arrangements should be made for this form of course through the Extension Division of the University. Correspondence with the committee is invited on subjects not listed in this circular.

11. Material for county or sectional medical society programs may be selected from this list and arranged through the Extension Division.

12. All correspondence relative to the organization of these courses should be directed to Mr. R. R. Price, director of the Extension Division of the University of Minnesota.

All inquiries relative to instructors or subjects should be directed to Dr. N. O. Pearce, 823 Nicollet Ave., Minneapolis, Minn.

The question of Postgraduate Education for practicing physicians at this time is receiving very considerable attention throughout the country. Most of the states through their Universities or their State Medical Societies, or in some cases, as Minnesota, by a coöperative endeavor, are offering some plan of Postgraduate work to the doctors of the state. In most states, there are short review courses offered at leading medical schools. This type of instruction is popular only to a limited degree. In the old days when a physician could atend a medical school for a postgraduate course for sixty or ninety days and return to the community as a specialist there was considerable incentive and certain schools who were offering short postgraduate courses in different specialties were meeting classes of considerable number. However, in more recent years since this type of specializing is no longer popular, the number of men attending short review courses are proportionately smaller. Many Universities have abandoned this type of instruction entirely because of lack of interest on the part of physicians.

In Minnesota this work has been offered once or twice a year for the past seven years. In spite of every effort on the part of the Medical School to furnish the very best material and instruction and to make the subjects as varied and interesting as possible, there has been a tendency to smaller rather than larger attendance. The cost has always been kept down to a minimum which would scarcely cover the expense. We

have been circularizing nearly five thousand physicians of the Northwest for these courses and the attendance ranges from 35 to 100 registrations. A rather interesting feature is that the course that drew the greatest number was one in physiotherapy.

Relative to the extension type of graduate work, there are three general plans in operation:

1. The Minnesota plan, which involves every county society appointing a committee on hospital and medical education. This committee on their own initiative to stimulate local interest and arrange through the state committee for such courses as they desire. The Minnesota plan offers the local committee the choice of

In Surgery	53	Instructors	offering	57	lectures
In Medicine	58	"	"	102	"
In Obstetrics	5	"	"	8	"
In Pedriatrics	14	"	"	25	"
Miscellaneous	7	"	"	9	"
	187			201	

All of these instructors are specialists, most of them well known teachers and all well equipped to present their subjects. This plan involves no expense to the society and a minimum expense to the physician subscribing to the course. The larger faculty list will make it possible to carry on a considerable number of courses at the same time without hardship and wide variety of subjects should make it possible for any group to obtain the type instruction desired. Some other states are using this general plan with local modification.

2. A plan which is in vogue in a number of states, and sponsored either by the University Medical School or the State Medical Society or in some cases the County Societies, where one or two instructors are employed full time, courses are arranged covering a period of 8 or 12 weeks in six communities, the instructors traveling from place to place so as to meet each group one day each week. Necessarily this plan involves the paying of a considerable amount in salary to these full time men, also traveling and living expenses. This plan also involves a considerable amount of detail in arranging the classes so that the instructors may be fully occupied and the distance between groups be not too great. States where this plan has been a success have found it necessary to maintain an organizer in the field most of the time. Necessarily the work offered by instructors in a plan of this type would be considerably limited in scope. This plan necessarily is expensive and does not offer the wide variety of instruction afforded by the plan now used in Minnesota.

3. A plan which is in use in larger centers and undoubtedly will become more popular as time goes on, is a class organized for a period of 8 to 12 weeks, hiring a well known instructor to present a course of lectures in his specialty. This is a plan much in favor in New York State and a very successful course of this kind has just been completed in Duluth. However, this method again involves payment of a salary to the instructor as well as expenses. Your committee in cooperation with the Extension Division and the Medical School of the University are preparing to arrange for such courses should any local group so desire.

Up to this time, less than half of the component societies of the State Medical Association have appointed committees on Medical Education and Hospitals and the desire of this committee is that the house of delegates take some action which will speed up this part of the program. While there have been courses almost continuously in operation since this type of postgraduate work was initiated three years ago and while the men who have taken these courses have expressed themselves highly pleased with this work, the committee feels that there is not quite the keen interest on the part of a good many sections of the state, that the excellence of this type of graduate work merits. The committee would appreciate a discussion by the delegates of our present plan of operation. Any suggestions as to more effective methods of stimulating interest among the physicians of the state, particularly the advisability of employing a field organizer for some part of the year, will be appreciated.

Respectfully submitted,

N. O. Pearce, M.D., Chairman.

President Braasch: You have heard the report and are familiar with it. You have heard the remarks and suggestions made by Dr. Pearce, Chairman of the Committee. What is your pleasure?

Dr. W. A. Jones (Minneapolis): I move its adoption.

The motion was seconded.

President Braasch: Before proceeding, have you any suggestions to make as to the adoption of the suggestion Dr. Pearce made in regard to a field secretary, or any other suggestions he made? Are there any suggestions as to the way this should be worked out? Are there any criticisms or suggestions from those delegates in the districts where it has been tried out?

Dr. A. C. Tingdale (Minneapolis): I move that part be left to the Council.

President Braasch: You make a motion to that effect?

A motion is before the house and we will take it up later on.

The motion was put to a vote and carried.

Dr. A. C. Tingdale (Minneapolis): I move that that part of his suggestion be left with the Council.

The motion was seconded.

President Braasch: It has been moved that this matter be left to the Council for executive action.

The motion was put to a vote and carried.

President Braasch: Dr. Stang of Wisconsin, will you rise and let us get acquainted with you?

Is there anything you would care to say? We would be glad to hear from you.

Dr. H. M. Stang (Eau Claire, Wis.): I only have to say that I was sent as a delegate from the state of Wisconsin to find out what I could learn that would be of value to us. Last year it was voted that the state of Wisconsin send four delegates, one to Iowa, one to Michigan, one to Illinois and one to Minnesota.

At the state meeting, which is to be held in Eau

Claire on the 21st, 22nd and 23rd of September, reports will be made by the various delegates and we will try to work out in these reports information that will be of value to us in increasing and bettering our society.

So far I can say I have certainly enjoyed sitting in this meeting and appreciate being here. (Applause.)

PRESIDENT BRAASCH: You may be interested to know, Dr. Stang, that this House of Delegates has adopted a similar motion sending delegations and we will propose the coming year to send a delegate to Wisconsin and return your visit.

DR. H. M. WORKMAN (Tracy): Mr. President, I would like to move inasmuch as the House of Delegates adopted the Constitution as read by section, that they now adopt it formally so that there will be no question about the adoption of the Constitution as presented here.

I move that the Constitution be adopted as amended.

The motion was seconded.

PRESIDENT BRAASCH: It has been moved and seconded that the Constitution, which has been previously read in detail, be now accepted in toto as amended.

Are there any remarks, suggestions or objections?

DR. F. J. SAVAGE (St. Paul): I think in order to comply with the provisions of the Constitution, the amendments and By-laws that have been offered today will have to be acted on at the next meeting. The Constitution itself is open for adoption or rejection now.

PRESIDENT BRAASCH: Any further remarks?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: I might say that this Constitution, as you all know, has meant a lot of work, particularly by the Chairman, Dr. Savage, and embodies the progress of the times and stands today as one of the best Constitutions in existence.

I might call upon the Resolutions Committee and ask whether they have any report to make as yet. If they have any suggestions to make we will be very glad to listen to them. Dr. Jones is Chairman.

DR. W. A. JONES (Minneapolis): The Resolutions Committee has not organized, but it will this noon. I will be ready to report tomorrow.

PRESIDENT BBAASCH: Next we will proceed to new business.

In the matter of new business you have all received several communications which are in the shape of resolutions which it is not necessary to read but if the authors of these various resolutions will take the floor and move their adoption they will then be referred to the Reference Committee for consideration and they will meet today as Dr. Jones says. They will report at the next meeting tomorrow noon and we can discuss it at will then.

The first communication under new business that has been received by the Secretary was that from A. G. Schulze and I don't think it is necessary to read this report now. It has already been published but we can go over the details later on with the report of the Committee.

If Dr. Schulze will move its adoption we can expedite matters.

DR. A. G. SCHULZE (St. Paul): I move the adoption of the resolution as published.

The motion was seconded.

PRESIDENT BRAASCH: Any remarks?

DR. W. A. COVENTRY (Duluth): I wonder if it is good form to adopt the resolution now. It should be referred to the Resolutions Committee.

PRESIDENT BRAASCH: It has been moved that it be referred to the Resolutions Committee. Will you so make your motion?

DR. A. G. SCHULZE (St. Paul): Yes.

The motion was put to a vote and carried.

PRESIDENT BBAASCH: The Council has invited Dr. A. J. Chesley, executive officer of the State Board of Health, to appear before the House of Delegates and he will present a resolution. Dr. Chesley, will you briefly tell us about your resolution? It has been published and we are doubtless familiar with it, but we will be glad to have some remarks from you.

DR. A. J. CHESLEY (St. Paul): The suggestion made by the State Board of Health is that insufficient information is available in the study of maternal deaths at the present time. It is said that the rate of maternal deaths in the United States are below all those in civilized countries.

In what Dr. Litzenberg said a while ago he says that the classification of the causes of death are so different in different countries that after all there is no fairness in comparing the rates as published without qualification of one country with another country's rates. In the states of Kentucky and Virginia, although the medical societies have asked the State Boards of Health to conduct such a study, if the society decides that it desires such a study the State Board of Health has funds with which it may be conducted. A competent physician will be chosen to do the work who will visit every physician and midwife as soon as possible after maternal death occurs, while the information is still in mind, and get the information which is provided for on the form gotten up by the committee named in the resolution. They are all prominent men. The heading of this form will be, "Minnesota State Medical Association, State Department of Health."

We have approximately 300 maternal deaths a year and you can see from the chart they are not decreasing. They run about the same all the time. As far as we can determine from our report, about 60 per cent of the deaths may be assigned to causes as follows: about 40 per cent are caused by sepsis of some form and about 20 per cent by toxemias of pregnancy, but whether these women were in the hands of physicians before confinement, what kind of care they had and so on, is unknown and the committee named in the resolution thinks study along that line might develop information which would be useful to the profession.

The State Board of Health is at your service if you desire to have this work done. (Applause.)

Dr H. M. Workman (Tracy): I move that resolution be referred to the Committee.

The motion was seconded, was put to a vote and carried.

President Braasch: We certainly welcome Dr. Chesley's presence and assure him we will be glad to coöperate with him in so far as we can at all times.

The next resolution was presented by Dr. E. A. Loomis. Dr. Loomis, would you care to do your stuff?

Dr. E. A. Loomis (Minneapolis): This resolution is the one referred to in Dr. McCloud's talk and I wish to have it referred to the Committee.

The motion was seconded, was put to a vote and carried.

President Braasch: The next resolution is presented by Dr. Fraley.

Secretary Meyerding: Dr. Jones has a copy.

President Braasch: I wish you would transmit it to the Resolutions Committee.

President Braasch read the resolution.

On motion regularly made, seconded and carried it was voted to refer the resolution to the Resolutions Committee.

President Braasch: There is a resolution from Dr. Newhart which I will ask the Secretary to read.

Secretary Meyerding read the resolution.

On motion regularly made, seconded and carried it was voted to refer the resolution to the Resolutions Committee.

Dr. Knight (Minneapolis): The Medical Department of the Army would be very glad to have this Association appoint a committee known as the Military Committee with whom they may confer on matters of personnel in the Medical Reserve Corps or any other medical matters they would like such advice on. I have therefore handed such a resolution to the Resolutions Committee and wish to move that it be referred to them.

The motion was regularly seconded and carried.

President Braasch: Are there any other resolutions which anyone would care to bring before the House?

Dr. C. B. Drake (St. Paul): It seems to me nothing definite was done about the recommendation of the House of Delegates to the Council in regard to the payment of expenses of the A. M. A. delegates.

If it is in order, I would move that travel and hotel expenses of our delegate to the A. M. A. be paid by the Association if it meets with the approval of the Council.

President Braasch: Do you mean that all expenses be paid or do you wish to refer that detail to the Council?

Dr. C. B. Drake (St. Paul): It would be the recommendation of the House of Delegates to the Council that those expenses be paid inasmuch as the Council is the financial body.

The motion was seconded.

President Braasch: You have heard the motion made that the House of Delegates recommend to the Council that all railroad and hotel expenses of the delegates of the A. M. A. be paid. Are there any remarks?

Dr. A. C. Tingdale (Minneapolis): It seems to me Dr. Litzenberg mentioned that $125 would cover those legitimate expenses, and I should wish to amend the motion that it be up to $125.

Dr. Plondke: Wouldn't it be well to recommend a per diem expense, say five dollars a day? Next year in Minneapolis there would be no railroad fare and very little hotel expense and the next time it might be out in California, so it is difficult, it seems to me, to specify a certain sum. Allow railroad fare and five dollars a day.

President Braasch: The amendment has precedence. Do I hear a second to the amendment?

The amendment to the motion was seconded.

Dr. C. B. Drake (St. Paul): Does that mean $125 to each delegate whether the meeting is in Minneapolis or anywhere else in the United States?

Dr. A. S. Tingdale (Minneapolis): I understood Dr. Litzenberg to recommend that. It would equalize. As has been suggested, a delegate would be appointed in the future that would be a continued delegate for years to come.

Dr. C. B. Drake (St. Paul): Inasmuch as we have different delegates from time to time, it seems to me rather unwise to arrange to pay $125 yearly and trust to luck that it will be an even break at the end. It seems to me that if the delegate has expenses they ought to be paid. If the expenses are from Duluth or Minneapolis next year why shouldn't they be paid? If they had to go to Texas or the Coast it seems to me the expenses should be paid.

Dr. J. C. Michael (Minneapolis): What is the custom?

President Braasch: The custom is very variable. Only a few of the states will pay all the expenses, some railroad fare, some hotel bills only. It is very variable.

Secretary Meyerding: Out of forty-two states there are only nineteen that don't pay anything.

President Braasch: Is there any further discussion on this amendment?

Dr. A. C. Tingdale (Minneapolis): I wish to say a few words on this amendment. It seems to me Dr. Litzenberg's recommendation should be adopted. He has been a delegate for years.

President Braasch: The amendment is that a lump sum of $125 be paid to the delegates.

The motion was lost.

President Braasch: We will go back to the original motion. Are there any further suggestions or remarks to be made in regard to the original motion?

The original motion was to the effect that the traveling and hotel expenses of the visiting delegates to the A. M. A. be paid, that the Council be instructed to pay the traveling and railroad expenses of the delegates to the A. M. A.

Dr. A. C. Tingdale (Minneapolis): Traveling and hotel expenses at the discretion of the Council. It

would be the recommendation of the House of Delegates that the railroad and hotel expenses be paid if it meets with the approval of the Council.

PRESIDENT BRAASCH: It is recommended that the hotel and traveling expenses be paid and recommended to the Council.

Any further discussion?

DR. B. S. ADAMS (Hibbing): We have to watch out not to let the expenses run away. While it is very desirable to pay their expenses I think there should be a limit. We don't need to pay all the expenses of the delegates. They are able to pay a little. I think it would be well to put a limit of, say, $100 or $125 as an outside limit, or the suggestion by Dr. Plondke I think would work out just as well.

DR. KNIGHT (Minneapolis): I think a large association representing the whole medical association in the state of Minnesota ought not ask a delegate to pay part of the absolutely necessary expense to get him there, keep him and bring him back. He ought to be given his railroad fare and his hotel expenses for just the few days he is there. That is not a very great sum and anything else in the way of entertainment that he wishes to spend money for is his own personal affair. The necessary things, railroad fare and hotel expense, should be met by the Association.

DR. PLONDKE: I move to amend that motion that we be allowed railroad fare and five dollars a day.

The amendment was seconded.

PRESIDENT BRAASCH: It has been moved and seconded that the original motion be amended to read that the delegate be allowed railroad fare and expenses of five dollars a day.

Railroad fare includes Pullman and expenses of five dollars a day.

Is there any discussion on this amendment?

The amendment to the motion was put to a vote and carried.

PRESIDENT BRAASCH: That leads us back to the motion. The original motion as amended was put to a vote and carried.

DR. F. J. SAVAGE (St. Paul): I want to offer a resolution, that the annual dues be fixed at fifteen dollars until modified by the House of Delegates.

The motion was seconded.

PRESIDENT BRAASCH: It has been moved and seconded that the annual dues be fixed at fifteen dollars until changed by the House of Delegates.

Any discussion?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: Are there any further resolutions to be brought before the House?

DR. H. M. PLUMMER (Rochester): Dr. Willius, of Rochester, has a resolution which he wishes presented to the House of Delegates. Dr. Willius expected to present this in person but he was ill. I knew nothing of this until the night before I came up here. Inasmuch as he is particularly interested in this and I am not probably as familiar with the movement as I should be, I requested that he write a short preamble to this motion which I will read. It will only take a moment.

Dr. Plummer read the preamble to the motion.

DR. H. M. PLUMMER: I move that this resolution be referred to the Resolutions Committee.

The motion was seconded.

PRESIDENT BRAASCH: Any remarks?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: There is one matter I wish to bring up before we adjourn.

We all realize that it will be absolutely impossible to show our appreciation to Dr. Herman Johnson in any adequate way for what he has done for the medical profession of this state. We are powerless to express it and any action we might take would not convey it, but nevertheless it seems to me we owe him some form of recognition and I would like to suggest that we might show it in some concrete way, such as giving him a gold watch with suitable sentiments engraved. I would like to have someone make a motion empowering me to appoint a committee to purchase such a watch to be given to him tomorrow at our annual banquet. I know he would appreciate it, and in conferring with his friends they all assure us he would. He would then have some concrete evidence of our appreciation.

If it appeals to you, a motion to any effect that you may consider would be appreciated.

DR. H. M. WORKMAN (Tracy): I move such a committee be appointed.

The motion was seconded.

DR. H. M. WORKMAN (Tracy): And empowered to secure the watch.

PRESIDENT BRAASCH: It has been moved and seconded that a committee be appointed to secure a gold watch as a token of appreciation of the work done by Dr. Herman Johnson.

Any remarks or suggestions?

The motion was put to a vote and carried.

PRESIDENT BRAASCH: The next meeting will be held here at twelve o'clock tomorrow noon and we will have our lunch served here for us. They have promised us it will be a warm, live meeting so everybody be here on time.

The meeting adjourned at twelve-thirty o'clock.

SECOND MEETING OF THE HOUSE OF DELEGATES, HOTEL DULUTH—DULUTH

July 1, 1927, at 12:00 o'clock

Dr. Wm. F. Braasch of Rochester, President, presiding.

Report of the Credentials Committee:

Credentials have been received during the meeting for fifty-three delegates out of the sixty-two. There are present just now about forty-three delegates.

Motion was made that this report be accepted. Seconded; carried.

DR. R. R. FERGUSON (Chicago): Mr. Chairman and Members of the House of Delegates:

If I were to shut my eyes and listen to the talk that I have heard around this table and during my stay at your very interesting meeting, I would think that I was in Illinois, because it seems that we are all working along the same line. I believe that in my few talks that I have had here and in seeing the things that you are doing here, that you are just the same as we and are doing just the same things as we are doing in Illinois and any other state.

I want to congratulate you on the new laws which you recently had passed, and if all our States had a "Herman Johnson" we think we all would be in much better condition than we are today. We, in Illinois, feel that we have a "Herman Johnson" in Doctor Neal of Springfield, who is spending hours and hours. So we feel very much in sympathy with the work that Doctor Johnson has been doing for you.

I bring greetings to you from Illinois. When I see the number in your House of Delegates it makes me think that I am in the Council of the Illinois State Society. Of course, our House of Delegates runs way over a hundred. So, while we are larger in size, we really are working along the same lines, and we appreciate very much being asked to meet with you today.

Dr. H. M. Stang (Eau Claire, Wisconsin): I did not know that I was supposed to say anything at this meeting. I might tell a story and sit down and get away with it, but I would like to say that the State of Wisconsin sent me to this meeting to learn and not to say anything about what we are doing, and as far as I can see I certainly am learning a great deal.

I feel too that Dr. Person of the State House of Delegates in Wisconsin functions the same as your organization. I can understand the enthusiasm at this meeting in regard to the Basic Science Bill, as the State of Wisconsin felt the same a few years ago, especially at the Green Bay meeting. The Basic Science law in Wisconsin is a little more stringent.

I too wish to bring greetings from the State of Wisconsin, and I hope we will see a good many of you at our September meeting. Your President is on the program and we would be glad to entertain any delegate from this State.

Dr. W. F. Braasch: We will now listen to a summary of the minutes of the previous meeting of the House of Delegates.

Dr. E. A. Meyerding gave a brief report of the adjourned meeting of the House of Delegates June 30, 1927.

REPORT OF THE REFERENCE COMMITTEE

Dr. E. A. Meyerding: Resolution Number 1—

Our second recommendation is that the Ramsey County Medical Society instruct its Legislative Committee to coöperate with the corresponding committee of the State Association to secure the passage of a bill which would require each and every applicant for admission to any free hospital, except in case of immediate emergency, to fill out blanks to show whether the applicant is able to pay; and that each applicant who is able to pay for his care and treatment shall be rejected, and that, if after such patient has been admitted and it is found that he misrepresented his financial condition, he will be subject to prosecution. (There is such a law in the state of New York and Louisiana.)

Dr. W. A. Jones: Report on Resolution Number 1—

The resolution recommended by the Ramsey County Medical Society to secure the passage of a bill which would require each and every applicant for admission to any free hospital, excepting in cases of immediate emergency, to fill out blanks to show whether the applicant is able to pay and that each applicant that is able to pay for his care and treatment shall be rejected and that if after such patient has been admitted it is found that he misrepresented his financial condition he will be subject to prosecution (there is such a law in the states of New York and Louisiana). This recommendation was referred to the Council for action.

Motion made by Dr. Coventry that the action taken by the Reference Committee be accepted.

Dr. Braasch: With regard to the recommendations, should the Reference Committee make a recommendation and if the House of Delegates does not agree I would suggest that, if agreeable, the recommendation be rejected on a two-thirds vote rather than a majority vote, because the Reference Committee certainly should have some authority and unless they do have some authority we really would not be of much practical value. I would suggest, in cases of this kind, that in order to overrule any suggestion made by the Reference Committee a two-thirds vote be requested, rather than a majority vote.

Dr. A. C. Tingdale: It seems to me that any democratic form of government always has a majority rule. I personally would object to any two-thirds rule under any circumstances. Therefore, I object to it.

Dr. F. J. Savage: It is not designed to take any prerogatives from the members of the House of Delegates. This proposed suggestion, to be acted upon by you, is the way business should be put on. It takes away none of your prerogatives. If you are going to debate each question that comes up for an indefinite period, then we might just as well make up our mind to spend the rest of the week right here.

Dr. Knight: It seems to me that the advice of this committee would be a very strong argument to the rest of us in our votes and I believe it should require a two-thirds vote.

Dr. H. M. Workman: I move that a two-thirds vote of the delegates present will be necessary to overrule a recommendation made by the Reference Committee.

Dr. Braasch: There is just one thing I would like to say in regard to the recommendations made by the Reference Committee. Our resolutions are made to the Reference Committee and they get all the data together and discuss them, and then bring back a recommendation. A motion is made that if the House of Delegates wishes to overrule this they can do so by a two-thirds vote. It does not require any revision of the by-laws in order to make it necessary for us to do this.

Dr. Smith: Why, what is it that is coming up? I think we are going to adopt everything that they

recommend. I believe that we would be unanimous in it, and I think we are wasting time now.

Dr. Braasch: All in favor of a two-thirds vote rise—(17). All in favor of a majority vote rise—(20). The motion is lost.

Dr. W. A. Coventry: I move that it takes a majority vote to overrule a recommendation made by the Reference Committee. Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 2—

Also to secure the passage of a bill making it impossible for a personal injury case, which does not come under the Workmen's Compensation Act, to be legally settled, in or out of court, without the bills for medical and surgical services and the bills for hospitalization being settled at the same time to the satisfaction of all parties concerned.

Dr. W. A. Jones: Report on Resolution Number 2—

The Reference Committee recommended that this be referred to the Committee on Contract Practice. Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 3—

Also that the Society through its Legislative Committee express to our representative in Congress and to the officers of the State and National Medical Associations, our disapproval of the World War Veteran Act in its present form."

Dr. W. A. Jones: Report on Resolution Number 3—

The resolutions committee decided that action is not advisable as we understand action has already been taken by the A. M. A.

Dr. G. S. Wattam: I move that the action of the Reference Committee be accepted. Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 4—

The Ramsey County Delegation also want to introduce a resolution at the State Medical Association meeting to urge the continuation of the Health Exhibit at the State Fair, which is in danger of being discontinued.

Dr. W. A. Jones: Report on Resolution Number 4—

Regarding the action of the State Agricultural Society of Minnesota, conducting the Minnesota State Fair, in discontinuing the Health Exhibit:

The delegation to the Minnesota State Convention assembled for the annual meeting at Duluth question why the public health education work is not to be conducted as previously, and given the same importance as other educational activities at the State Fair. If such lay organizations as the State Fair take no interest in public health, from what groups then can there be expected support? The delegates of the Minnesota State Medical Association feel that this responsibility rests with those conducting the State Fair Association.

(Presented by Ramsey County Delegates)

This Committee recommends that the Exhibit be continued and suggests that the Secretary confer with the proper officials with a possible view to reaching settlement.

Dr. George Earl: I move that the same be accepted. Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 5—

The Ramsey County Delegation also would recommend that the 1928 State meeting which is to be held in Minneapolis be set some time in the fall to avoid conflict with the American Medical Association meeting in the spring.

Dr. W. A. Jones: Report on Resolution Number 5—

This paragraph relative to the 1928 state meeting which is supposed to be held in Minneapolis, referred to the delegates for consideration as there is a plan on foot to have a one-day meeting of the House of Delegates on the day before the session of the A. M. A. opens.

That is done for economic reasons so that we can come to both meetings for the same price. This delegates' meeting will not interfere at all with the meeting of the A. M. A. and they will not interfere with us. It simply simplifies it.

Dr. Braasch: It is proposed that our scientific program be merged with the scientific program of the A. M. A. There would only be a meeting of the House of Delegates of the Minnesota State Medical Association, and no separate scientific program, as that would interfere with the activities of the A. M. A. If we held a scientific program and they also, both would suffer as a result. This suggestion is open for your consideration. No specific recommendation is made; it is left entirely to the House of Delegates for action. The chair would entertain some motion in regard to this matter, and also discussions which you care to have.

Dr. S. H. Baxter: In behalf of Hennepin County, I desire to extend an invitation to meet at Minneapolis next year.

It was moved and seconded that the next meeting of the State Association be held in Minneapolis. Carried.

Dr. Braasch: Now having decided the place, the Council will set the time, according to the Constitution, and we would entertain suggestions in regard to the kind of meeting or nature of meeting.

Dr. Drake: Just to start a discussion I would like to say that it seems to the delegates of Ramsey County, and I think would appear so to the other delegates, that to have our meeting at the same time as the A. M. A. would be a sort of a side-show, and although I realize that the Council determines the exact time we thought that the Council would not feel that the House of Delegates would be overstepping its function if the subject should be brought up as to what is the best time for us to meet. It seems to me we ought to have the regular meeting and it is the feeling of the Ramsey County delegates that the fall would be the better time.

Dr. W. A. Jones: The A. M. A. decides on the date of the meeting of the A. M. A. and it depends a good deal upon getting proper quarters, meeting rooms, entertainments, etc. As far as we can learn the meeting of the A. M. A. will be about June 11. It has occurred to us that we would ask the State Association to meet at the same time and thereby save considerable expense to the men from the country.

Dr. Braasch: It seems to me that if we would all

coöperate and back the A. M. A. by merging our scientific program with that of the A. M. A., I fail to see what we could lose by it, and it seems to me that it would reflect credit if we would accept it.

Dr. J. M. Hayes: I don't know just why the Saint Paul men want the meeting in the fall, but there is no reason why we couldn't have it. I don't know as it would be any harder for Minneapolis to have it, if the others desire.

Dr. M. W. Smith: I move that this matter be decided by the Council.

Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 6—

Red River Valley Medical Association states:

"There are a couple of factors I wish to call your attention to and which I think should be brought up probably before the committee on resolutions at the Duluth meeting. One of these is the question of our physicians' Liability Insurance. The Ætna, at present, are giving us a $5,000-15,000 policy for twenty-one dollars, and it is possible to get a $10,000-30,000 policy for twenty-one dollars from the U. S. F. & G. In other words, we can get double the protection for the same premium. I think this should be investigated and whatever action deemed necessary taken.

Dr. W. A. Jones: Report on Resolution Number 6—

The Resolutions Committee recommended that this matter be referred back to the local society.

We feel that nobody should dictate to any state society or any member of any state society what fees he shall charge for his services. We feel also that although the Minnesota State Society is tied up in a sort of a way with the Ætna Company, still it is not a complete tie-up. Any man that is a member of the State Society has the liberty to get his insurance wherever he wants to and get it from somebody else. For that reason we suggest that the first resolution which is in regard to changing of policies from $500-15,000 with the Ætna, to $10,000-30,000 with the U. S. F. & G. is up to the local members, and therefore it is referred back to the local society.

Motion made that the action of the Resolutions Committee be adopted.

Dr. Tingdale: I move that the opinion of the Committee be also returned to the local society, so that they know really why it was returned. It seems to me that it was a very good opinion, and I think it should be attached. I amend the original motion that the opinion be also returned to the society by this committee.

Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 6½—

The other question deals also with Ætna Company, but in a different capacity. It deals with their attitude as underwriters for the Minnesota State Workmen's Compensation Bureau. They have the habit in practically every case of trying to get us to discount our bills from twenty-five to forty per cent and inasmuch as they are the only company underwriting the Workmen Compensation Liability insurance who take this attitude, we, here in the Red River Valley Society, feel that a stand should be taken by the state association in regard to their action. I wish that you would bring this material in the proper form before the proper committee of the state assoeiation.

Dr. W. A. Jones: Report on Resolution Number 6½—

This matter concerns insurance companies attempting to persuade doctors to discount their bills from twenty-five to forty per cent. The resolution committee feels that if anybody is foolish enough to do this, let them, and therefore we refer it back to the local society.

Motion made to adopt the action of the Reference Committee. Seconded; carried.

Dr. Braasch: This being the first time the Reference Committee is tried out, there will be some hitches, but it is getting along remarkably well. It is modeled after the methods employed by the American Medical Association meeting of the House of Delegates.

Dr. E. A. Meyerding: Resolution Number 7—

Resolved that the State Medical Association terminate the agreement with the Ætna Life Insurance Company to insure the doctors of this state under the group plan.

Dr. W. A. Jones: Report on Resolution Number 7—

This resolution submitted by a member of this clinic. We advise that it be returned to the author without recommendation as any member of this society may seek insurance of any sort in any company he may select.

Dr. M. W. Smith: I move that the action of the Reference Committee be adopted. Seconded; carried.

Dr. E. A. Meyerding: Resolution Number 8—

Resolved that the Minnesota State Medical Association urge the Legislature at the next session to amend the Workmen's Compensation Act;—

To wit—That an injured employe may have the right to select his own physician immediately, without losing any of his rights or privileges under the Workmen's Compensation Act. *Explanation*—(As the Act is now worded an employe must accept the company doctor or he may lose his entire compensation). Some insurance adjustors deny this, but the ruling of the State Industrial Commission and the decision of some of our courts confirm this fact. This is manifestly unfair to the employe as well as to the medical profession.

Second—The Insurance Companies have established a Fee Basis 50 to 75 per cent under the usual medical fees and hire doctors on this basis, to take care of the work. This makes it difficult for the profession to maintain a reasonable fee basis. This change in the law would be a step to correct the harm in the Act.

Third—The next thing would be for the local societies to establish a minimum fee basis for the members to charge insurance companies.

Dr. Jones: Report on Resolution Number 8—

The resolution introduced by Dr. E. A. Loomis which deals with compensation and fee reduction is referred to the Committee on Contract Practice. Your committee suggests that the Committee on Contract Practice be continued.

Dr. L. Sogge: I move that the same be adopted. Seconded by Dr. G. S. Wattam; carried.

Dr. Tingdale: Does that mean that it might die in this committee, or that it would be taken up at the next meeting of the House of Delegates?

Dr. Braasch: I dare say that the Contract Practice Committee will take care of that and will report at the next meeting of the House of Delegates.

Motion made that this matter be considered by the Committee, but that it be reported at the next meeting of the House of Delegates.

Dr. Braasch: The motion will then read that the Committee on Contract Practice will meet, and report on this matter at the next meeting of the House of Delegates. Carried.

Dr. E. A. Meyerding: Resolution Number 9—

"Recognizing the fact that the most effective means for the prevention of deafness consists in the early detection of hearing impairment, thereby giving opportunity for the prompt removal of contributing causes, and, believing it to be one of the important functions of our public school authorities to safeguard the integrity of the special sense organs, as well as the general health of the school child: be it

"Resolved, By the Minnesota State Medical Association that it heartily favors the provision by our public school authorities for regular periodic examinations of the hearing acuity of all public school children, such examinations to be adequate to detect even slight degrees of hearing loss."

Dr. W. A. Jones: Report on Resolution Number 9—

The resolution by Dr. Horace Newhart is approved by the Reference Committee.

Dr. Knight: I move that the action of the Reference Committee be approved; seconded; carried.

Dr. E. A. Meyerding: Resolution Number 10—

Resolved—That the Minnesota State Medical Association appoint a military committee with which the Medical Department of the United States army may confer in matters of medical personnel and which may act in an advisory capacity toward the army in medical matters.

Dr. W. A. Jones: Report on Resolution Number 10—

The recommendation of Dr. Ralph P. Knight relative to the appointment of a military committee is approved with the suggestion that the President of the Minnesota Medical Association appoint such committee.

Dr. H. M. Workman: I move that the action of the Reference Committee be approved; seconded by Dr. Coventry; carried.

Dr. E. A. Meyerding: Resolution Number 11—

The Council has invited Dr. A. J. Chesley, Executive Officer State Board of Health, to appear before the House of Delegates and he will present the following Resolution:—

A suggested resolution regarding the proposed study of maternal deaths in Minnesota.

WHEREAS, It is said that the United States has a higher puerperal death rate than any other civilized country with one exception and there has been no evidence of downward trend in the puerperal death rate during the past fifteen years, and

WHEREAS, The factors are not known which affect the puerperal death rate in the United States making it seem higher than any other country, and

WHEREAS, the Consulting Obstetrical Committee of the United States Children's Bureau—consisting of Dr. Robert DeNormandie, Chairman; Dr. Fred L. Adair, University of Minnesota Medical School; Dr. Rudolph W. Holmes, Rush Medical College, Chicago; Dr. Ralph W. Lobenstine, Maternity Center Association, New York; Dr. Frank W. Lynch, University of California Medical School; Dr. James H. McCord, School of Medicine, Emery University, Atlanta, Georgia; Dr. C. Jeff Miller, Tulane University, Louisiana; Dr. George Clark Mosher, Kansas City; Dr. Alice Pickett, University of Louisville Medical School; Dr. Fred Taussig, St. Louis—has suggested that a study of puerperal deaths would be of great value to the medical profession;

BE IT RESOLVED, That the State Medical Association coöperate with the State Department of Health in making a study of maternal deaths.

Dr. W. A. Jones: Report on Resolution Number 11—

The resolution introduced by Dr. Chesley relative to the investigation of the puerperal death rate is recommended.

Moved and seconded that the action of the Reference Committee be adopted; carried.

Dr. E. A. Meyerding: Resolution Number 12—

A resolution made by Dr. Plummer and referred to the Resolutions Committee that the President be empowered to appoint a Heart Committee, consisting of five members, three of which are to be from the members of the Minnesota State Medical Association. It was suggested that the President confer with officials of the Minnesota State Heart Association in regard to the personnel of this committee.

Dr. W. A. Jones: Report on Resolution Number 12—

The reference committee recommends that favorable action be taken in regard to the resolution presented by Dr. F. A. Willius requesting that the President be empowered to appoint a committee consisting of five members, three of which are to be from the members of the Minnesota State Medical Association. It was suggested that the President confer with officials of the Minnesota State Heart Association in regard to the personnel of this committee.

Dr. W. F. Braasch: It has been suggested and requested by the Reference Committee that the President appoint such a committee to be made in conference with the Heart Association as to its personnel. I might say incidentally that I received a letter from the American Heart Association requesting that this State Association take such action.

Dr. F. J. Plondke: I move that the action of the Reference Committee be approved. Seconded; carried.

Dr. W. F. Braasch: We will now listen to a report of the second meeting of the Council by Dr. H. M. Workman.

SECOND MEETING OF THE COUNCIL

Called to order by Dr. Workman at 4:10 p. m., Thursday, June 30.

Members present: Drs. Sogge, Savage, Coventry, Hare, Wattam, Dodge, Workman, and E. A. Meyerding.

The Council suggests the name of Dr. J. C. Litzenberg as delegate to the American Medical Association to succeed himself.

The Council suggests the name of Dr. W. F. Braasch as alternate delegate to the American Medical Association to succeed Dr. LaVake.

Motion made by Dr. Coventry, seconded and carried that the Association pay the railroad fare and $5.00 per day to the members of the House of Delegates of the American Medical Association, this becoming effective Jan. 1, 1929.

With regard to Dr. Pearce's suggestion that a local field agent be employed to advance the work of the Committee on Hospitals and Medical Education, a motion was made by Dr. Coventry, seconded and carried that Dr. Pearce present a detailed budget for the year 1929, and that the House of Delegates authorize the council to make such an appropriation if they deem it advisable.

Motion made by Dr. Coventry, seconded and carried that the Chairman of the Editing and Publishing Committee, the Chairman of the Council and the State Secretary enter into an agreement with the publishers of Minnesota Medicine to have such publishers keep their own books, making a trial balance statement to the Secretary every three months and a final audit with distributions of profits or deficit at the end of the fiscal year and that the publishers be bonded by the Minnesota State Medical Association in an amount which in their judgment they deem sufficient. It is understood that the State Association will pay to the Bruce Publishing Company quarterly one-fourth of their estimated budget. It should be clearly specified in this contract that it has no bearing upon the policy of the journal, that it is only a matter of keeping the books.

It is the suggestion of the Council that Dr. J. W. Andrews of Mankato be made an Emeritus member.

The Council recommends that resolutions of thanks for their kind courtesies and coöperation should be sent to the following:—

The Saint Louis County Medical Society

Mr. Nichols of the Duluth Hotel

Mr. Duff of the Chamber of Commerce, whose cooperation has done so much to make this meeting a success

Duluth Tribune and Herald

Associated Press

Dr. Braasch: You have heard the report of the Council, and I would suggest that it be approved, leaving out the election of officers until later.

Motion made by Dr. Chapman that the Report of the Council be adopted, with the exception that was suggested. Seconded; carried.

Dr. Braasch: We will now proceed with the election of officers. The chair will entertain nominations for president.

Dr. W. A. Coventry: I wish to nominate a man who is well known to the House of Delegates. He has been the president of his local society and he has also been extremely active in the interests of the State Medical Association as well as the local society. He has also been active in legislative matters during the past two or three sessions, but particularly so during the last session. A man that we can look to with honor. I wish to place in nomination the name of Dr. C. B. Wright of Minneapolis.

Dr. C. B. Wright of Minneapolis was unanimously elected president for the ensuing year.

Dr. Chapman nominated Dr. Charles Bolsta of Ortonville for first vice president and he was unanimously elected.

Dr. Adson nominated Dr. A. G. Liedloff of Mankato for second vice president; elected unanimously.

Dr. E. A. Meyerding, St. Paul, was re-elected secretary and Dr. Earle R. Hare, Minneapolis, treasurer.

Dr. F. A. Dodge, of Le Sueur, was re-elected councillor of the Fourth District.

Dr. W. H. Condit, of Minneapolis, was re-elected councillor of the Sixth District.

Dr. W. W. Will, of Bertha, was elected to fill the unexpired term of Dr. F. G. Millspaugh, deceased.

Dr. G. S. Wattam, of Warren, was re-elected councillor of the Eighth District.

Dr. W. F. Braasch: We next proceed with the election of Delegate to the American Medical Association.—Dr. Litzenberg.

Dr. Hare: In order that there may be no misunderstanding with reference to the nomination, I would like to make a word of explanation. Dr. Litzenberg has been very firm in his presentation of a certain thing with reference to the delegate to the A. M. A. He stated in connection with the presentation of this matter that it was his fixed desire to retire from this position; hence, he felt perfectly free to make the suggestion. I dare say that the suggestion which he made will now be carried into effect.

We have been told that the efficiency of this delegate or our delegates at the A. M. A. depends upon first a term of specification and then a term of real service.

If that be true, and I take it it must be true, then there is in the mind of the Council no hesitation in stating that the present incumbent of this position is the man to succeed himself, and with the word of explanation which I have already made, in order that Dr. Litzenberg will be freed entirely of embarrassment in this matter, I desire now, after the suggestion of the Council, it being their unanimous opinion that this is the thing to do, place the name of Dr. Litzenberg to succeed himself for the period beginning now.

Dr. J. C. Litzenberg of Minneapolis was elected by a rising vote.

Dr. W. F. Braasch of Rochester was elected alternate delegate.

Dr. W. F. Braasch: We will now go on with unfinished business. The secretary will read the various

amendments to the Constitution as proposed for adoption.

Dr. E. A. Meyerding:

Constitution—Article IV, Section 1. In the second line of the printed copy after the words "Emeritus Members" and before the words "and Guests" add the words "Honorary Members." The section will then read as follows: This Association shall consist of Members, Delegates, EMERITUS MEMBERS, HONORARY MEMBERS and Guests.

Constitution—Article IV after Section 4, and as Section 5 add the following: "Honorary members shall be those elected to such membership by the House of Delegates on the recommendation of the Council."

Constitution—Article IV, That section which is now section 5 relating to Guests shall be Section 6.

By Laws, Chapter 1—Membership—Section 3. In the first line, after the word "Emeritus" insert the word "Honorary."

Constitution, Article VII, Sections and District Societies. In the fourth line of the second paragraph, after the word "such" and before the word "Districts" omit the words "sparsely settled."

Constitution, Article X—Funds and Expenses. Omit the first sentence of this Article which reads "Funds shall be raised by an equal per capita assessment of members." In the second line after the word "The" and before the word "shall" omit the words "amount of the assessment," and insert in lieu thereof the words "Annual Dues." This article will then read as follows:—"The Annual Dues shall be fixed by the House of Delegates, etc."

Dr. W. A. Coventry: I move the adoption of the Constitution read as amended. Seconded; carried.

Dr. E. A. Meyerding: *By-Laws, Chapter VIII, Section 12*—Add as Section 12 the following: "Council shall discharge such duties as are provided by law."

By-Laws, Chapter IX, Section 4. The following be inserted: "In matters of general policy pertaining to the welfare of the State Association the Editing and Publishing Committee shall defer to requests from the Council."

Dr. W. F. Braasch: You have heard the by-laws as amended. Are there any objections?

It was moved and seconded that the by-laws be adopted as amended. Carried.

Dr. W. F. Braasch: As you know, the installation of officers will be at 10:30 tomorrow morning at the regular meeting place and I will appoint as a committee to present the President-Elect, Drs. Hayes, Knight and Harvey.

I think that is all the business that comes before the House of Delegates, unless there is some new business.

Dr. Schuldt: I would like to express the appreciation of the delegates of the splendid way in which our present president has conducted the affairs of the Association, and I would like to have it expressed by a rising vote for our President "Bill Braasch" for his splendid work.

The same was complied with.

Dr. Braasch: Gentlemen—I appreciate your expression more than I can say.

Dr. Plondke: While it was referred to the Council, I believe that the House of Delegates should extend their thanks to the State Association Committees and to the local committees for the effective work that they have done and for the splendid meeting that they have put on. I would suggest that this be signified by a rising vote.

Seconded; carried.

The same was complied with.

Meeting adjourned.

SCIENTIFIC SESSIONS

THURSDAY AFTERNOON, JUNE 30, 1927

The first scientific session of the Fifty-ninth Annual Meeting of the Minnesota State Medical Association, held at the Duluth Hotel, Duluth, Minnesota, June 30 to July 2, 1927, convened at one forty-five o'clock, Dr. E. L. Gardner presiding.

1. Medical Clinic, Hilding Berglund, M.D., Minneapolis.
2. The Parathyroid: Retrospect and Prospect, A. M. Hanson, M.D., Faribault.
3. Diphtheria and Scarlet Fever, W. P. Larson, M.D., Minneapolis
4. Symposium on Immunization and Acute Infectious Diseases:
   a. Immunization—Diphtheria and Scarlet Fever H. L. Eder, M.D., Minneapolis.
   b. Reactions and Observations in 2,000 Immunizations, D. E. McBroom, M.D., Faribault
   c. Measles, J. T. Christison, M.D., Saint Paul
   d. Pertussis, E. J. Huenekens, M.D., Minneapolis

   Discussion on Symposium on Immunization and Acute Infectious Diseases, I. A. Abt., M.D., Chicago, Ill.
5. Diagnosis and Treatment of Non-Opaque Foreign Bodies in Bronchi, K. A. Phelps, M.D., Minneapolis.

INTERMISSION

6. Symposium on Pulmonary Tuberculosis
   a. Pathogenesis of Tuberculosis, H. E. Robertson, M.D., Rochester
   b. Immobilization in the Treatment of Pulmonary Tuberculosis, E. K. Geer, M.D., Saint Paul
   c. Surgical Treatment of Pulmonary Tuberculosis, A. A. Law, M.D., Minneapolis.

   Discussion on Symposium on Pulmonary Tuberculosis, F. F. Callahan, M.D., Pokegama.

MEDICAL ECONOMICS MEETING

1. Illinois Lay Education Program, R. R. Ferguson, M.D., Chicago, Ill.
2. Minnesota Public Health Education Program, G. A. Earl, M.D., Saint Paul
3. Medical Economics, M. L. Harris, M.D., Chicago, Ill.
4. Legislation and the Doctor,
   H. M. Johnson, M.D., Dawson
   Charles Bolsta, M.D., Ortonville
   Senator Cannon, Saint Paul

J. T. Christison, M.D., Saint Paul
C. B. Wright, M.D., Minneapolis
L. Sogge, M.D., Windom

FRIDAY MORNING, JULY 1, 1927

1. Calcium Therapy in the Functional Nervous Disorders, C. C. Gault, M.D., Owatonna
2. Vertigo from an Ophthalmological Standpoint, C. L. Oppegaard, M.D., Crookston
3. Symposium on Gallbladder and Liver:
   a. Physiology of Liver and Gallbladder, F. C. Mann, M.D., Rochester
   b. Present Status of Cholecystography, B. R. Kirklin, M.D., Rochester
   c. Principles of Surgery of the Gallbladder, Arnold Schwyzer, M.D., Saint Paul

   Discussion on Symposium on Gallbladder and Liver, A. R. Colvin, M.D., Saint Paul; Hilding Berglund, M.D., Minneapolis

INTERMISSION

4. Non-Operative Treatment of Fractures, F. D. Dickson, M.D., and R. L. Dively, M.D., Kansas City, Mo.
5. Radiographic Interpretation, P. M. Hickey, M.D., Ann Arbor, Mich.
6. Physiotherapy, John Coulter, M.D., and H. E. Mock, M.D., Chicago, Ill.

FRIDAY AFTERNOON, JULY 1, 1927

1. Cancer of the Uterus, J. C. Litzenberg, M.D., Minneapolis
2. The Cervix as a Focus in Chronic Disease, C. H. Mayo, M.D., Rochester
3. Present Trends in Gynecology, J. O. Polak, M.D., Brooklyn, N. Y.

INTERMISSION

4. Symposium on Gastro-Intestinal Tract:
   a. Physiology of Gastro-Intestinal Tract, W. C. Alvarez, M.D., Rochester
   b. Control of the Pylorus, C. B. Wright, M.D., Minneapolis
   c. *X*-ray Diagnosis of Disease of the Stomach, P. M. Hickey, M.D., Ann Arbor, Mich.
   d. Gastric Surgery, D. C. Balfour, M.D., Rochester
   e. Treatment of Chronic Ulcerative Colitis, J. A. Bargen, M.D., Rochester.

BANQUET SESSION, FRIDAY EVENING, JULY 1, 1927

Opening Remarks, C. H. Mayo, M. D., Rochester
Address of Welcome, W. A. Coventry, M.D., Duluth
Remarks, J. O. Polak, M.D., Brooklyn, N. Y.
Remarks, I. A. Abt, M.D., Chicago, Ill.
Introduction of Guests
Remarks, Mrs. J. T. Christison, Saint Paul, President of the Women's Auxiliary
Remarks, H. M. Johnson, M.D., Dawson
Remarks, Mrs. Ben Davis, Duluth, President-elect of the Women's Auxiliary
Address, W. F. Braasch, M.D., Rochester
Expression of Thanks, H. M. Johnson, M.D., Dawson.
Remarks, C. B. Wright, M.D., Minneapolis, President-elect

SATURDAY MORNING, JULY 2, 1927

1. Rectal Fistula in the Tuberculous, W. A. Fansler, M.D., Minneapolis, and C. K. Pelter, M.D., Oak Terrace.
2. Value of Refraction in Children, W. H. Fink, M.D., Minneapolis
3. Pediatric Clinic, I. A. Abt, M.D., Chicago, Ill.
4. Peptic Ulcer, J. B. Carey, M.D., Minneapolis.
5. Malarial Treatment of Paresis, J. M. Michael, M.D., Minneapolis
6. The Treatment of Acute Empyema, J. M. Hayes, Minneapolis

INSTALLATION OF OFFICERS

7. Symposium on the Heart:
   a. Bacteriology of Heart Disease, B. J. Clawsen, M.D., Minneapolis
   b. The Hypertension Heart, G. E. Fahr, M.D., Minneapolis
   c. The Heart in Diphtheria and Other Infections, M. H. Nathanson, M.D., Minneapolis
   d. Coronary Disease, W. S. Middleton, M.D., Madison, Wis.
   e. Heart Disease from the Insurance Standpoint, C. N. McCloud, M.D., St. Paul.
8. Clinic on Diseases of the Circulatory System, W. S. Middleton, M.D., Madison, Wis.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

MINNESOTA LICENTIATES, JUNE 1927
BY EXAMINATION

Name	Medical College	Address
Abraham, Arden Llewellyn	U. of Minn., M.B. 1927	2429 Girard Ave. So., Minneapolis.
Bernstein, William C.	U. of Minn., M.B. 1927	Stillwater, Minn.
Brown, Harold W.	U. of Minn., M.B. 1927	1055 14th Ave. SE., Minneapolis.
Brown, John Lyman	U. of Minn., M.B. 1927	1055 14th Ave. SE., Minneapolis.
Brown, William Donald	U. of Minn., M.D. 1926	608 E. 14th St., Minneapolis.
Dahl, Clarence Arnold	U. of Minn., M.B. 1927	2015 Lyndale Ave. N., Minneapolis.
Didriksen, Sarah Hoff	U. of Minn., M.B. 1927	529 Oak St., SE., Minneapolis.
Engstrom, George Frederick	U. of Minn., M.B. 1927	Swedish Hospital, Minneapolis.
Haes, Julius Ernest	U. of Minn., M.B. 1927	St. Luke's Hospital, Duluth.
Hawkinson, Raymond Paul	U. of Minn., M.B. 1927	1139 Bryant Ave. N., Minneapolis.
Head, Douglas Parry	U. of Minn., M.B. 1926	55 Dell Place, Minneapolis.
Higgins, George Kendall	U. of Minn., M.B. 1927	1717 Third Ave. So., Minneapolis.
Holmer, Valentine Christian	U. of Minn., M.B. 1927	603 Delaware St. SE., Minneapolis.
Hutchinson, Henry	U. of Minn., M.B. 1927	603 Delaware St. SE., Minneapolis.
Inge, Theodore R.	U. of Minn., M.B. 1927	St. Louis, Mo., City Hospital No. 2.
Johnson, Herbert Wm. Everett	U. of Minn., M.B. 1927	Cal. Luth. Hosp., Los Angeles, Cal.
Johnson, Jacob Arthur	U. of Minn., M.B. 1927	525 Jessamine, St. Paul.
Johnston, Rufus Oscar	U. of Minn., M.B. 1927	Nashwauk, Minn.
Jones, Wm. Ray	Med. Coll. So. Car., M.D. 1923	1009 Nicollet Ave., Minneapolis.
Kerkhof, Arthur C.	U. of Minn., M.B. 1927	1811 Emerson Ave. N., Minneapolis.
Leggett, Elizabeth Ann	U. of Minn., M.B. 1927	1931 Iglehart Ave., St. Paul.
Leven, Nathaniel Logan	U. of Minn., M.B. 1927	1712 Lincoln Ave., St. Paul.
McGreane, Frank	U. of Minn., M.B. 1927	Shullsburg, Wis.
Marshall, James Max	U. of Pa., M.D. 1925	Mayo Clinic, Rochester.
Milton, John Swanson	U. of Minn., M.B. 1927	Swedish Hospital, Minneapolis.
Minsky, Armen	U. of Minn., M.B. 1927	1159 N. 6th St., Minneapolis.
Moss, Frederic Henry	U. of Minn., M.B. 1927	Apt. 353 Curtis Hotel, Minneapolis.
Naslund, Ames William	U. of Minn., M.B. 1927	Eveleth, Minn.
Nelson, Leslie Frank	U. of Minn., M.B. 1927	203 7th St., Cloquet, Minn.,
Nelson, Robert Lyman	Northwestern, M.D. 1926	510 Fidelity Bldg., Duluth, Minn.
Saliterman, Bernard Irving	U. of Minn., M.B. 1927	534 Girard Ave. N., Minneapolis.
Satterlee, Howard Wilson	U. of Minn., M.B. 1927	University Hospital, Minneapolis.
Seeley, Sam Foster	U. of Minn., M.B. 1927	3723 Upton Ave. N., Minneapolis.
Short, Jacob	U. of Minn., M.B. 1927	644 Dayton St., St. Paul.
Singer, Benjamin	U. of Minn., M.B. 1927	303 St. Anthony Pk., St. Paul.
Stevenson, Gilbert Miller	U. of Minn., M.B. 1927	5801 Glenwood St., Duluth, Minn.
Thompson, Arthur	Northwestern, M.D. 1927	Raymond, Minn.
Vaughan, Victor Milton	U. of Minn., M.B. 1927	Winnebago, Minn.
Vezina, John Charles	U. of Minn., M.B. 1927	Ellsworth, Wis.
Warren, Cecil Alexis	U. of Minn., M.B. 1927	208 S. Victoria St., St. Paul.
Westerman, Alvin Emil	Northwestern, M.D. 1927	Montgomery, Minn.
Wildebush, Frank F.	U. of Minn., M.B. 1927	629 Washington Ave. SE., Minneapolis.
Zanger, Isabelle Marie	U. of Minn., M.B. 1927	3101 Humboldt Ave. So., Minneapolis.
Zehm, Abner	U. of Minn., M.B. 1927	2804 42nd Ave. So., Minneapolis.

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THE PRESENT TREND OF GYNECOLOGY*

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Brooklyn

THE Chairman of your Committee on program has asked me to discuss this subject, probably with the idea that, while I can add little or nothing to your knowledge of gynecology, or to the treatment of its several lesions, perhaps I may be able to crystallize for you the present day views on pathology and practice and so place you in a better position to fulfill the service which is required of you in your daily work.

At the present time when each community has its own small hospital, usually an open hospital, and the surgical furor has seized the profession, gynecology is passing out of the hands of the specialist into those of the general surgeon—yet the conditions and disorders pecular to women are just as varied and require just as keen an appreciation of the peculiar basic pathology, the physiologic resistance and the minute anatomy, as do the lesions of the eye or ear; yet few general surgeons hesitate to attack any gynecological problem which may present itself to them, when they would enlist the help of the expert in a case of cataract or sinus thrombosis.

Fortunately, the pendulum has gradually swung from empiricism to a more rational gynecology which is founded upon physiologic pathology. Perhaps nothing so well illustrates this trend toward the stimulation of nature's resources better than the present day understanding and the practice in cases of acute pelvic infection. Infections in the pelvis commonly have either a Neisserian, puerperal or operative origin. A study of the life history of each of the infecting organisms demonstrates that each in the course of its invasion has a selectivity for certain tissues and that likewise nature attempts to erect successive barriers for their isolation and extermination. Therefore, it may be stated *that surgical procedure in acute pelvic infection is limited to the drainage of localized purulent foci.*

Over one-half of the lesions peculiar to women have their origin in childbirth. These are illustrated by the traumas, descensus, cervical infections and displacements—all the direct result of faulty obstetric practice; while about three-fifths of the remaining 50 per cent are the direct result of some form of infection.

Gonorrheal Infection.—The initial symptoms of gonorrhea in the female are usually less acute than in the male—in fact the disease is often subacute or chronic from the beginning, showing few local symptoms except an increase in vaginal discharge; yet chronic gonorrheal infection is capable of producing greater ravages and more permanent pathology than almost any other form of pelvic infection. The acute stage passes rapidly into the subacute or chronic, where the infection is found located in Skene's glands just within the meatus, on the floor of the urethra or as a chronic endocervicitis in the racemose glands within the cervix. *Undisturbed, cervical gonorrhea remains a local disease and terminates in a pathological entity which is known as a cystic cervicitis*—this, however, is always attended by a tissue hypertrophy with increase and change in character of the cervical discharge. Gonococci usually cannot be recovered from these chronic cervical lesions; yet active surgical treatment not infrequently spreads the infection to the endometrium and through the tubes. Skene's glands, on the other hand, harbor these cocci perhaps somewhat changed in their morphology but always ready under proper stimuli and virgin contact to relight and reinfect, which explains the frequent exacerbations in so-called chronic gonorrhea *which are in reality reinfections.* It is now a well recognized fact that the gonorrheal cervicitis is intractable and can only be

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

cured by glandular destruction or glandular ablation. It has furthermore been demonstrated that no one condition is so frequently the cause of sterility as is endocervicitis and that infection may be spread to the parametrium, tubes and peritoneum by intracervical and intrauterine instrumentation with the dilator, curet or stem. A few years ago these lesions of the cervix were treated with iodin, phenol and tampons; then as the result of the writings of Leopold, Sturmdorf and others, it became fashionable to excise the cervix. This, in turn, has been followed by the general acceptance of the electric cautery, but time has shown that none of these therapeutic measures can be relied upon to relieve the woman of her leucorrhea, or destroy or remove the entire glandular area which supplies the cervical mucus. Furthermore, operation and cauterization of the cervix are not curing sterility as the latter seems to change the character of the remaining mucoid discharge, while the former removes the cervix from its position in and its relation to the fornices and the seminal pool. That excision and amputation have a definite influence upon the development and character of subsequent pregnancies and labor must be admitted by even the most enthusiastic advocates of these procedures.

Lacerations.—Birth injuries occur even in the most expert hands and the only difference in the lesion produced by the midwife and the doctor is that in a case conducted by the former there is submucous fascial stretching and muscle injury, while in the case delivered by the physician the injuries are open wounds. This perhaps explains why physicians have a larger per cent of infections than the well-trained foreign midwife. Certain obstetric fundamentals seem to have escaped the mind of the physician soon after his graduation: (1) that labor takes time; (2) that the baby cannot come out before the cervix is open; (3) that wounds, especially traumatized wounds, are liable to infection and do not heal *per primam.* There is a general trend at present toward the immediate repair of all birth injuries—and while this is most commendable in pelvic floor and fascial tears, we are not convinced of the safety or the necessity of suture of every cervix wound. Such teaching is not free from danger in the hands of the average practitioner, for few realize that at the termination of labor the uterovaginal tract is an open wound and owing to the severe traumatism which these tissues have sustained has a lowered resistance against infection and is, therefore, more prone to inoculation from the vaginal flora and to the development of consecutive infection. We subscribe to the immediate repair of birth injuries when there is little trauma or edema; and to the intermediate repair on the seventh day of old injuries or of new ones when there has been an operative delivery. These repairs are definitely surgical procedures which require the most perfect asepsis, knowledge of the pathology and the avoidance of all tissue constriction by suture material. Could we secure the coaptation of such tears without tension in nonedematous tissues, primary cervical repair would result in a condition similar to that which obtained before delivery.

It is generally accepted that cervical injuries predispose to the development of cancer. Likewise, the presence of erosions favors malignant changes, yet the fact must not be lost sight of that all repair work is subject to some degree of destruction at subsequent births—hence, it is the present obstetric and gynecologic practice to take care of the inflammatory lesions in the cervix by appropriate postpartum care and postpone operative procedures until a time when the woman has finished her childbearing. Postponement of cervical repair would always be possible if dilatation was accomplished by the physiological factors which enter into the mechanism and were it not for the impression that has gained support among the rank and file, *i.e.,* that the cervix can be dilated by other means than those supplied for this physiologic process. However, the fact remains that manual or instrumental dilatation is in fact manual or instrumental laceration; while dilatation as accomplished by time and the intact membranes leaves little injury to be repaired.

Fibroids.—Fibroid tumors of the uterus are the most common neoplasms found in women in the fourth decade of life. The fact that a woman has a fibroid does not mean that this fibroid requires operation; for many fibroids exist and produce no symptoms. *But all fibroids need watching,* for at some time in their development the majority have some circulatory change or grow under the stimulus of repeated menstruation, pregnancy and infection and produce menstrual changes or pressure effects. It is, therefore, important for the physician to ap-

preciate the relation which location and circulation have to the life and development of a fibroid tumor. The life history of every fibroid depends on its location and its relation to its circulation. Its development is limited almost to the period of sexual activity; the growth does not invade the wall of the uterus but merely expands it; the growth is in the myometrium *but not of it* and the uterus is constantly contracting and evolving the tumor in the direction of least resistance. Hence, all submucous tumors are subject to intrauterine extrusion and ultimately result in a terminal necrosis metrorrhagia, and intermenstrual discharge; while almost all subperitoneal tumors at some period of their development will become extruded, pedunculated and twisted, or will grow and produce pressure referable to the bladder, rectum, pelvic veins, pelvic nerves or digestive tract. It is only the slowly developing intramural growth which may possibly disappear from atrophy. Therefore, in selecting an operative procedure one has to determine which growth is amenable to radium and which growth requires hysterectomy or myomectomy. Only by proper individualization can the selection of the form of treatment be determined; for tumors which are adherent and incarcerated in the true pelvis obstructing the rectum or ureters or distorting the bladder always demand surgery. On the other hand, intramural tumors of the size of a three months pregnancy in which menorrhagia is the prominent symptom can be cured by radium or the *x*-ray. It is therefore a good rule never to elect a procedure for the removal of a fibroid without making the most careful and painstaking examination under anesthesia to determine the location of the tumor or tumors, their relation to the uterine cavity and circulation as well as their characteristics, fluctuance and density.

Clark and Keen's contraindications to radium should be in the hands and in the head of every man who proposes to use radium therapy. These contraindications to roentgen ray and radium may be summarized as follows:

1. Tumors larger than a three months pregnancy; though in emergency either *x*-ray or radium may be employed in the presence of large tumors to temporarily check the hemorrhage.
2. In rapidly growing tumors which suggest progressive changes.
3. In tumors producing pressure symptoms.
4. In tumors associated with pelvic pain.
5. In pedunculated tumors, in which radium only tends to increase the necrosis.
6. In tumors with associated adnexal pathology.
7. In tumors with associated secondary anemia (the patient having a cachectic appearance) in which the uterine hemorrhage has not been sufficient to account for the degree of anemia.
8. In tumors in young women.
9. In multiple submucous growths in which the character of the mass cannot be definitely differentiated.

In women who have a fear of radium.

All of the foregoing conditions are better and more safely treated by surgery.

Preoperative preparation.—This is being better and better understood by the operating surgeon. Dehydrated patients are benefited by intravenous infusions of glucose and many of those in whom the hemoglobin is low require transfusion. All patients should have twenty-four to forty-eight hours rest in bed before being subjected to operation. A high or exceedingly low white cell count or a rapid blood sedimentation time is a bad operative prognostic. After operation nature's demand for fluids, chlorides and glucose is being satisfied by intravenous infusion and copious hypodermoclysis and as a result post-operative convalescence is less trying and stormy.

Sterility.—Probably no condition has received so much painstaking study as has the question of sterility. Formerly it was empiric to dilate and curet the uterus of every barren woman, and numberless plastic operations on the cervix have been devised to offer a larger entrance for the passage of the spermatozoa. Fortunately, for women, this is a thing of the past and now each patient who presents herself complaining of sterility is studied as to the pecular cause—and these causes may be grouped under six general headings:

1. Defective production of spermatozoa.
2. Obstruction or hostility in the male passages.
3. Faults of delivery and reception.
4. Hostile endocervical secretions.
5. Tubal occlusion.
6. Defective ovulation.

It is therefore apparent that in any case of primary sterility the male party to the contract must receive investigation prior to instituting or

recommending any form of treatment for the female member. The potency of the male is best shown by the Huhner test (the examination of the spermatozoa in situ following coitus). This is not only simple and efficient but it also gives a clue to the location of the trouble in the woman and the success of the particular coitus. *Man* may be credited with over 30 per cent of the primary sterilities resulting from underdevelopment, hypofunction, atrophy, epididymitis, prostatitis, change in vesicular secretions, malformations or impotence. *In the woman* endocervicitis takes first place. This lesion so changes the character of the cervical mucus that the spermatic elements of the male die of exhaustion before achieving their goal—entrance to the uterine cavity. Tubal infection and its sequelæ make up the next large group in the causes of barrenness, for inflammatory involvement of the tubes or peritubal tissues is not alone the result of gonorrheal invasion but is a common sequel of operations upon the cervix, labor and abortion. Fortunately, through study of the living pathology of these lesions, we have learned to correlate the history with the pathology and so prognosticate to a certain degree what each form of infection will do. This is all-important in the treatment of sterility.

Those patients in whom live spermatozoa can be demonstrated within the cervical canal or in the uterus, yet who do not conceive, may have their lesion higher up in the uterine endometrium, tubes or ovaries. In 1919 Rubin demonstrated that it was possible to accurately and safely insufflate the tubes with carbon-dioxide gas and thus show their patency or impatency. With this fact ascertained, the function of the ovary and that elusive something which may be termed "sexual response" are the only other factors to be taken into consideration. The time of coitus and its relation to ovulation is now claiming considerable attention. For with the isolation of the sex hormone which Frank and Goldberger have recently demonstrated, it is possible to determine with accuracy whether or not the woman ovulates and the time at which ovulation takes place—even in the absence of menstruation. Hence a properly timed coitus may result in impregnation. Ovarian hypofunction and low metabolic rates are frequently associated in the obese woman. Hypofunction of the ovary, unfortunately, is little understood; cystic changes cause atresia of the follicles. Atrophy is often the result of prolonged septic infection—such an ovary may be seen without a single follicle or corpora on the surface. The large white ovary with thickened capsule, the result of chronic circulatory stasis, which is usually found low in the pelvis, has, in our experience, the greatest chances for developing an ovum which may become impregnated. Hence, it will be seen that more careful study of the physiologic acts of the elements and organs taking part in conception has placed the treatment of sterility on a more rational basis.

Retroversion, associated with retroflexion and some degree of descensus which always coexists, is most commonly an acquired condition, for even if the original retroversion was congenital, the partial torsion or twist in the pelvic veins will so engorge the uterus if continued for a long enough time that a pathology due to circulatory stasis in all of the pelvic organs must be established. The blood supply of the pelvis was apparently developed as a protection against infection, a definite line of defense; for while it is luxuriant and the muscular contraction of the uterus propels the blood, there is only one valve in the entire venous circulation of the pelvis. Hence, subinvolution and retro-displacement will naturally add to this circulatory stasis and produce a permanent pathology in the organs, tissues and blood vessel walls. It is, therefore, my belief that the development of an acquired retroversion with descensus or the exaggeration of a congenital backward displacement is a gradual but progressive process which always develops a chain of complications which are directly attributable to the interference with the venous circulation and faulty uterine drainage; which in turn produces change in the pelvic tissues in the form of edema, hypertrophy and cell prolifieration. Therefore, we teach and practice *correction* and *retention* of retro-displacement. Congenital retroversions in virgins or in newly married women, producing no symptoms, need no local treatment. Special attention, however, should be given to the care of the rectum and pelvic colon in these women, as fecal stasis is a common cause of pelvic complications.

At the present writing there are more than one hundred different operations and modifications of original procedures on the round, broad and uterosacral ligaments which are being prac-

ticed by the general and special surgeon for the cure of retroversion—with most disappointing end-results. Congenital displacements or those congenital versions to which acquired flexions have been added are by far the most difficult to cure, for so much depends on the degree of:

1. Cervical invagination.
2. The position of the cervix and its relation to the vaginal axis.
3. The length of the uterosacral ligaments.
4. The inclination of the brim of the pelvis.
5. The depth and inclination of the symphysis and,
6. The strength and development of the round ligaments.

When the accomplishment of a result depends upon the study and appreciation of so many different factors, is it a wonder that we err in the selection of type of procedures or in the detail of technic? The operation for the particular case must be a "Mrs. Jones" operation or a "Mrs. Smith" operation—not a routine surgical procedure applied to different anatomical conditions. Probably with the exception of the curet or stem pessary, no one gynecological condition has caused more unnecessary surgery and all that this means in morbidity, sequelæ and mortality than have the many operations for retro-displacement. There is an instrument known in history as a pessary (long since forgotten) which has many virtues which are unappreciated by our surgical friends. A pessary will cure an acquired retroversion if the uterus can be completely reposited and if there is sufficient muscular structure in the pelvic floor to hold the pessary in place. *The pessary does not correct a retroversion* but retains the *reposited organ* in anteversion after the uterine misplacement has been manually or posturally *corrected.* It anteverts and raises the uterus in the pelvis by raising the upper part of the posterior vaginal wall which makes upward and backward traction on the cervix. In the mechanics of the pessary the posterior vaginal wall runs over the posterior or upper bar of the pessary as a pulley and draws the cervix upward and backward; while the anterior bar takes its purchase and rests on the pubic shelf behind the pubis, being retained in this position by the pelvic floor. In this way it acts as a scaffold in supporting the anterior vaginal wall.

If proper care was given the woman at her confinement, or at the time of her abortion and during the postpartum and postabortal periods, over 80 per cent of the retroversions going about the country, falling into the hands of operating surgeons, competent or incompetent, would be cured by palliative measures. Prior to 1910, in our follow-up clinic, the incidence of backward displacements which occurred in women who were discharged from the hospital on the fourteenth day with a uterus in anteflexion or anteflexed retroposition, was 38 per cent.

In 1910, we began our postpartum studies by establishing a postpartum follow-up clinic. Each patient before leaving the hospital was instructed to assume the knee-chest position night and morning and taught the "monkey trot" (walking on all fours) and told to return to the clinic *one month* from her discharge from the hospital. If at this visit the uterus was retroverted, it was reposited and a properly fitting pessary adjusted to retain it in anteversion. The patient was then instructed in the care of the pessary; with a result that at the end of three months only 2 per cent of our cases had uncorrected retro-displacements. Fewer and fewer operations are being done during the childbearing period.

These remarks upon the advantages of the pessary would not be complete without mention of the contraindications. A pessary is contraindicated when any of the following conditions are present:

1. A large relaxed introitus without sufficient muscular structure in the pelvic floor to hold a pessary in place.
2. In lacerations of the cervix with hyperplastic change and parametric inflammation in the base of the broad ligaments or in the uterosacral ligaments.
3. In inflammation of the pelvic peritoneum.
4. In the presence of prolapsed tender ovaries.
5. In the presence of posterior uterine adhesions limiting the mobility of the uterus.

All parametric, peritoneal and tubo-ovarian inflammation must be quiescent and all exudative processes completely absorbed before a pessary can be employed. The requirements imply the necessity of preliminary local treatment in the form of posture, douches, boro-glyceride packs; and above all *time.*

Cancer of the cervix and uterine body has been the subject of extensive study for many

years; and, while we must admit that the etiology is still unknown, certain clinical facts regarding the life history of cancer are accepted and make up today our basis for treatment.

1. Long continued irritation and chronic inflammation are conditions which pave the way for the development of new cell formation—hence, ectropion and erosion predispose to cancer.

2. Cancer begins as a local disease, appearing as a small, hard, indurated nodule on either cervical lip and develops as the inverting or everting type.

3. That extension is either by continuity along the adjacent mucosa or by extension along the lines of lymphatic drainage.

4. The earliest symptoms of cancer, *i.e.,* the change in character of the leucorrheal discharge and metrorrhagia, occur as a result of tissue necrosis—therefore, are not present in the incipient changes.

5. That cancer in its incipiency, *i.e.,* when it exists as a nodule or ulcer wholly within the confines of the cervix, is *curable* by destruction or ablation—admitting the truths of these observations.

The preventive treatment is the repair of cervical injuries and the education of our women in the necessity of periodic pelvic examinations by competent observers. All questions of doubt must be settled by the microscopic examination of the biopsy specimen (removed with a keen cutting knife and sealed with the cautery). Only *group one* cases of cancer in its incipent stage can be cured. Two methods of attack are admissible in present day practice:

1. Massive doses of radium with blocking of the parametrial lymphatics by deep *x*-ray therapy.

2. The radical operation which removes the uterus, cervix and adnexa with the upper portion of the vagina and parametria.

In all cases where the growth has extended beyond the confines of the cervix, radium is the agent of choice. In cancer of the body, radical extirpation preceded by massive radiation four to six weeks before operation has given the best results. In conclusion we may say that:

1. The trend of gynecology today is in the direction of a better understanding of the basic pathology.

2. All our therapy is based upon this underlying principle.

3. The trained surgeon has a greater respect for the physiological processes known as nature's defensive barriers.

4. Fewer operations are being done for the correction of obstetric errors.

5. All operations are being preceded by intelligent preoperative preparation.

6. Operation for cancer is only done in selected cases.

THE ADMINSTRATION OF CALCIUM SALTS

The intravenous and subcutaneous administration of calcium is attended with dangers or discomfitures; therefore the possibilities of the oral route eall for careful consideration. A survey of the literature on the absorption of calcium as it may be reflected in a change in the blood concentration of the element might leave one unconvinced of the efficaey of administering calcium compounds by mouth. Many elinicians have aceordingly abandoned the praetiee. More reeent studies give evidence, however, that with due attention to the condition of administration it is possible to elevate the serum caleium eoncentration by the oral route of calcium supply. Experiments indicated that the optimal dose of ealcium lactate is 5 Gm. and that the drug must be given in aqueous solutions when the digestive tract is comparatively empty; that is, either before breakfast or several hours after food has been consumed. Larger doses prevent optimal absorption. (Jour. A. M. A., September 17, 1927, p. 968.)

YEAST

Yeast is rich in vitamin B. This is the only vitamin whieh it eontains in important quantity as far as is known at present. Aeeording to New and Non-official Remedies, 1927, yeast has been used (a) in the past as a baetericide in the treatment of superficial infections, but this use of yeast has been practically abandoned; (b) as a sourse of vitamin B, for which yeast has been widely extolled; but, under usual conditions, the vitamin B requirement ean be met by customary foods; (e) as a laxative, but only in case it does not eause intestinal distention; (d) in the past, as an internal remedy for furuncles and acne, but it is doubtful whether the benefit is in excess of the laxative effeet; (e) as a stimulator of leukoeytosis, but its efficacy in this respect is doubtful. The yeast obtained in grocery stores is essentially "brewers' yeast." It may be obtained either in semisolid form or in the form rendered solid by the addition of absorbent material. (Jour. A. M. A., September 27, 1927, p. 1080).

THE CERVIX AS A FOCUS IN CHRONIC DISEASE*

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IN the records of one of Hippocrates' cases mention is made of a patient suffering from joint trouble who improved greatly following the "freeing of the mouth of much disease."

Benjamin Rush, more than 2,000 years later, remarked that improvement followed the extraction of abscessed teeth in a case of "joint disease." During the last thirty years a great deal of attention has been given to this subject and many diseases are now considered to be caused and often maintained by foci of infection.

Only a few men stand out in the development and promulgation of the modern idea that foci of infection may play a part in certain diseases. Billings and Deland blazed the trail, and there were not so many of us who made choice of their road. Rosenow, working first with Billings, began experimenting in an effort to establish or refute the idea that infected or abscessed teeth, infected tonsils and infected sinuses might be at the bottom of certain diseases. Hayden's work has corroborated the work of Rosenow. While it is true that there are many diseases so caused, the theory of focal infection apparently is now at a lower ebb than it was a few years ago. This is probably a result of the growth of specialized medicine and the excessive zeal of practitioners who are filled with the spirit of achievement but are lacking in the ability to succeed. Elective localization of bacteria and the transmutation of bacteria have been largely studied by Rosenow, who has worked many years in this special field.

Not infrequently such lesions as arthritis, urticaria, or an inflammatory condition of the eye show little or no improvement following the removal of two or three devitalized teeth, the tonsils and perhaps an operation or two on the nose and sinuses. Sufficient work on focal infection has been done to arouse the suspicion that such treatment often fails because the focus has not been found or that only one of two or three foci have been removed. There are three possible sites of focal infection which are commonly overlooked: the cervix, the prostate and the roots of teeth in edentulous patients. Definite foci of infection are not uncommonly found in patients all of whose teeth were removed many years before because they had been condemned and perhaps correctly so; yet a roentgen-ray examination of the gums shows an abscessed root or two which has not caused local trouble but may have been responsible for an infectious process quite remote from the focus.

Another common site of foci of infection is the prostate. Certainly the cervix and prostate should be as carefully examined as the teeth, tonsils and sinuses in any condition which may be thought to be caused by chronic foci. In this paper special emphasis is placed on chronic endocervicitis. Before Emmet's work little attention was given to such pathologic processes in the cervix.

The cervix develops from the second portion of Müller's duct; it originates quite independently from the body of the uterus. The juncture of the uterus and the cervix forms the internal os, which serves as a sphincter and is therefore more or less a barrier to invading microörganisms. It is composed of circular muscular fibers lined with mucosa containing funicular glands which secrete mucus. The lymphatics of the cervix are connected in part with the lymphatics of the body of the uterus.

Rosenow has placed the cervix on a par with the tonsils as a site of infection. However, the tonsils are probably better able to destroy infection than the cervix is.

The cervical mucosa is in numerous small folds. The circulation is comparatively sluggish and really affords a most excellent opportunity and site for the invasion and persistence of microörganisms. A large number of cases in women have been noted in which the disease, such as an inflammatory condition of the eye, rheumatism in a small joint, or urticaria, persisted until finally infection in the cervix was discovered and eradicated.

A condition with similar possibilities exists in the male, namely prostatitis. The removal of

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the tonsils and teeth frequently does not cure the evident disease but further search for possible foci often reveals masked prostatitis which is amenable to treatment.

Quite conclusive evidence has been presented that a great many of the gross lesions of the pelvis quite often come from an infected cervix. The patient is subjected to a serious operation, diseased tissue is removed, subtotal abdominal hysterectomy may be carried out, but relief may be only temporary or partial. It is in such cases that the infected cervix, possibly responsible for the condition, should be removed.

Dickinson cites a striking case of urticaria that was cured by the removal of an infected cervix after both tonsils and teeth had been removed. The patient had traveled widely in search of a climate that might ease the tormenting condition of the skin.

In a hospital for the insane, Langstroth selected fifty cases in which there was evidence of focal infection. Eighteen of the patients showed definite improvement following the removal of infected teeth and tonsils but none of the eighteen was actually cured. In twenty-one of the cases there was definite evidence of endocervicitis as well as infection of the teeth and tonsils. In fifteen of the twenty-one cases the teeth and tonsils were removed with little or slight improvement. In seventeen of the twenty-one cases (in which there was demonstrable evidence of endocervicitis) the cervical mucous membrane was removed, and the patients were dismissed as having recovered mentally.

This work, of course, is not intended to convey the idea that insanity is commonly due to endocervicitis or any focus of infection, yet it does not seem unreasonable to infer that certain areas in the brain may be affected, since the same blood that carries microörganisms to other organs and nerve tissue and causes them to become infected must also circulate in and supply the brain.

Sturmdorf described how chronic infection in the cervix spreads along the lymphatics to the uterus and produces lesions there and in the adnexa. Although he was explaining the relationship of chronic cervical infection to dysmenorrhea and sterility, his argument may be applied to the more remote effects of focal infection in the cervix.

Benedict and his associates in the Clinic recently investigated twenty-four cases in which there were inflammatory lesions of the eye; eighteen patients were men and six women. In the men besides eradicating the usual foci they investigated the prostate. With the organisms obtained by prostatic massage forty-five animals were injected. In 29 per cent lesions of the eye were produced similar to those of which the patients were complaining. In the six cases in women, organisms were obtained from the cervix and injected into sixteen animals; 31 per cent showed definite lesions of the eye corresponding to those present in the patients.

A woman came to the Clinic in 1922 because of chalazion of the right upper eyelid which subsided following treatment. About three years later she returned because of more "eye trouble" which was found to be due to corneal ulcers. This condition was treated for fifteen months but was never entirely cured. The history in this case was irrelevant except for an operation for ectopic pregnancy in 1922. The patient had complained of slight leukorrhea for many years. After all other possible foci had been eliminated all the interior of the cervix was removed, and cultured by Dr. Rosenow in glucose-brain broth. The culture showed streptococci. A vaccine was made and administered. There was an exacerbation of the eye condition about one week after the operation, which was again treated locally. Two weeks after the operation the corneal lesions had improved markedly. The vaccine was reduced to one dose each week. The patient has been free from trouble now for five months, whereas previous to the operation trouble had been almost constant for fifteen months with only temporary relief.

Moench studied eighty-two miscellaneous cases of leukorrhea at the Clinic and found the most conspicuous organism to be a streptococcus. Cultures were made and injected into animals, following which three distinct pathologic conditions were observed in the animals at postmortem, namely purulent arthritis, cholecystitis and hemorrhagic areas in the muscles. In some of the cases the purulent arthritis was the only lesion found. This work was done in an investigation to determine especially the relationship of chronic endocervicitis to chronic arthritis. Moench has also recently studied carefully twelve cases of scleritis and episcleritis in women from nineteen to sixty-one years of age. In

all the cases all possible foci were eradicated before attention was given to the cervix; there was slight or no improvement. Investigation of the cervix revealed a definite infection of the mucous membrane; when this was cured and streptococcus vaccine injected definite improvement or complete recovery resulted.

It is not our intention to convey the idea that every cervix should be operated on and every prostate massaged; but when a patient complains of some condition that suggests investigation of possible foci of infection, the search should not cease until all the possible sources of focal infection have been carefully examined. It usually does the patient little good to remove an abscessed tooth and leave tonsils which are definitely infected. The degree of infection in tonsils frequently cannot be ascertained until they are removed and examined.

Whenever abdominal hysterectomy is performed it is wise for two reasons to remove the mucous membrane and gland-bearing tissue of the cervix. First, it is not uncommon for a patient to return with carcinoma of the cervix following subtotal hysterectomy. Nine such cases have been seen in the Mayo Clinic in the last three or four years; in one of them subtotal hysterectomy had been performed nine years before. Second, there is a possibility that the cervix will become a focus of infection. After removal of the body of the uterus, the circulation in the cervix is decreased and a more fertile soil thus provided for infection.

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GONOCOCCUS IMMUNOGEN, GONOCOCCUS IMMUNOGEN COMBINED, STREPTOCOCCUS IMMUNOGEN, STREPTOCOCCUS IMMUNOGEN COMBINED, PERTUSSIS IMMUNOGEN COMBINED, AND PNEUMOCOCCUS IMMUNOGEN COMBINED NOT ACCEPTABLE FOR N.N.R.

The Council on Pharmacy and Chemistry reports that Immunogen is the name applied by Parke, Davis & Co. to bacterial antigen products free or nearly free from bacterial cells and toxin. The firm requested the Council to consider a number (twelve) of these products in 1924. The Council decided to consider eligible for acceptance those simple immunogens in the case of which similar bacterial vaccines stood accepted. Regarding the "mixed" immunogens which had been presented, the firm was informed that adequate evidence for the value of these preparations was lacking, but that any new evidence for their therapeutic value would be considered. The firm presented evidence which permitted the acceptance of two of the simple immunogens. In view of the inquiries received concerning the advertising claims made for immunogens, Parke, Davis & Co. was informed that the Council desired to take definite action in regard to those which had not been made acceptable. The firm was requested to send the advertising for the, as yet unaccepted, immunogens that were being marketed together with any further information which would aid in determining their acceptability for inclusion in New and Non-official Remedies. On the basis of the available evidence the Council denied admission of the gonococcus and streptococcus immunogens to New and Non-official Remedies because no simple vaccines representing these organisms stand accepted; the "combined" immunogens (Gonococcus Immunogen Combined, Streptococcus Immunogen Combined, Pertussis Immunogen Combined, Pneumococcus Immunogen Combined) are held unacceptable for lack of adequate evidence of their therapeutic value. (Jour. A. M. A., September 17, 1927, p. 984).

CANCER OF THE UTERUS: THE OPPORTUNITY OF THE FAMILY PHYSICIAN IN ITS CONTROL*

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THE control of cancer is an unrealized dream, not because no progress has been made in the treatment, but because the etiology eludes detection and prevention in general seems hopeless. In cancer of the uterine cervix, however, the "precancerous" condition is known and offers some hope of prophylaxis.

In the booklet issued by the American Society for the control of cancer, the following statement is made:

"Cancer, with our present knowledge, cannot be prevented, and our only hope lies in early diagnosis and qualified interference." This is not entirely true of cancer of the cervix uteri for the cause of the "precancerous" chronic irritation is known to be due to injuries from childbirth and infections.

The family physician must take his part in educating the public to report at the appearance of any suspicious symptom such as irregular menstruation, intermenstrual bleeding, chronic discharge, particularly near or after the menopause. Bleeding or discharge after the menopause nearly always means cancer.

He must also become an advocate of the periodic examination of the pelvic organs so that early diagnosis may be made and treatment instituted at once. Delay in treatment, even of a week, affects the cancer mortality. We have been shocked at the Cancer Institute of the University to find that even after cancer has been suspected, or even diagnosed, there has been a delay of weeks and even months. One Institute reported that 25 per cent of entering cases had been examined by physicians on an average of seven months before admission.

When the patient has symptoms which are not definite but may possibly indicate the presence of cancer, waiting for distinct symptoms is too often the policy. During this time the disease frequently becomes incurable.

BIOPSY

In all cases that are in the least suspicious, a diagnostic curettage and a biopsy should be made with little fear of metastasis.

Frances Carter Wood showed that in rats the incised malignant tumor and the non-incised tumor showed the same percentage of lung metastasis.

TREATMENT

The family physician should also be familiar with the most modern ideas of treatment, so that he may properly advise his patients.

Hysterectomy is considered the method of choice in cancer of the body of the uterus because it gives good results, but most surgeons irradiate before or after the operation and some do both.

In cancer of the cervix, however, irradiation has almost completely displaced hysterectomy.

In spite of improved radical surgery, the results are still so discouraging that a great majority of leading surgeons all over the world are abandoning hysterectomy for cancer of the cervix, in all except the very earliest cases. For example, Döderlein, Bumm, Kehrer, Menges, abandoned surgery several years ago. In Switzerland, such a leader as Beutner of Geneva never employs surgery for cancer of the cervix. In France, the great Hartmann, Ragand, Siredey, and Nogier seldom do a hysterectomy for this purpose. Likewise in Sweden, Norway, Holland, the British Isles, Austria, Italy, and America, great names have gradually added their lustre to the galaxy of surgeons advocating irradiation as the procedure of choice in practically all cases of cancer of the cervix.

In 3,905 cases treated by radical surgery, and collected by Dr. R. E. Swanson of the Cancer Institute at the University of Minnesota, 16 per cent were cured. He also collected 4,654 treated by irradiation, of which number 17 per cent were cured.

There is little advantage for irradiation in the statistics of "five year cures" in early cases, but when primary mortality and treatment of inoperable cases are considered, irradiation has a distinct advantage.

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The immediate mortality from hysterectomy is one in three, and in irradiation, one in one hundred.

"In cancer of the cervix, the procedure of choice is irradiation, which is not equalled in any other field" (Crile).

At the World Cancer Conference last year, I heard Hartmann of France say: "Irradiation is better than the knife in cancer of the cervix," and I heard Crotti of Italy, De Vries of Holland, and representatives of all countries, at the conference, agree with Hartmann.

The necessity for doing something more than make an early diagnosis and institute proper treatment at once is attested by the fact that in spite of ten years of public education, better diagnostic methods, improved surgery, and the marvelous development of irradiation—cancer mortality steadily increases.

More than 100,000 persons die of malignancy every year in the United States. According to the last printed U. S. census (1924), the total mortality was 191,138 in the registration area (eight states not in the area). Of these deaths, 11,403, or 12.5 per cent, were due to cancer of the uterus. The same census report shows that the cancer deaths in Minnesota numbered 2,575, of which 247 were from cancer of the female genital organs.

According to statistics, cancer is tremendously on the increase, the above figures being 46 per cent more than the cancer deaths in 1900. The cancer mortality in 1900 was 63 per 100,000 population, and in 1924 it was 86 (corrected rates). The deaths from tuberculosis in 1900 were 182 per 100,000, and in 1924 they were 89 per 100,000, graphically showing what improved treatment, prophylaxis and education of the public may do when intelligently undertaken.

May we not show similar results, if we will but grasp our opportunities for the possible prevention of cancer of the cervix?

But there are those who tell us that cancer mortality is not increasing, that the apparent increase is due to improved diagnosis, that the span of human life has been lengthened and therefore there are more people of cancer age to have cancer.

We must admit the improvement in diagnostic methods and that the span of human life has increased nine years since 1911, but even these cannot account for all the increase. It is not probable that the diagnosis of the accessible cancers of the skin, breast and mouth has improved very much, yet malignancies in these locations show increases from 2.9 in 1900 to 8.6 in 1924, about proportionate to the increases in less accessible locations.

Cancer mortality doubled in England in thirteen years. There are now 2,500 more deaths per year in the United States than occurred when the campaign for control of cancer began ten years ago.

Effective control of any disease can come only with the discovery of its etiology. Although the definite cause of cancer still eludes detection, much has been learned through research. Many things that it is not have been determined, for example, it is not infectious, communicable, or parasitic. Also much has been learned about its age, sex, family and racial incidence, and the susceptibility of certain organs, and many other factors in etiology.

The one definite, outstanding fact about which all agree is that cancer occurs primarily as a local disease at sites of chronic irritation. "Cancer never begins in a healthy spot" (Bloodgood). "No one has yet seen a cancer which was not preceded by some form of chronic irritation" (W. J. Mayo).

Familiar sites of precancerous chronic irritation are the lip, buccal cavity, stomach, rectum, breast and uterus. Of all malignant tumors, authorities agree that none is preceded by more constant "precancerous" conditions than cancer of the cervix uteri, namely cervicitis and birth injuries. Less than five per cent of cancers of the cervix occur in women who have not had birth injuries, and probably all of them have infected cervices. Because of this knowledge, the ease of diagnosis on account of its accessibility, and its familiar symptoms, it is peculiarly amenable to treatment. Furthermore, the conditions are curable by methods applicable by any physician.

Leukorrhea is the commonest, and one of the most important, symptoms in gynecology. It always means cervical infection and hence chronic irritation. Physicians do not seem to realize its great importance, medical students evidently are not taught its dangerous significance, and almost nothing has been done to educate the public that

it may be a forerunner of cancer. It is viewed by the "familiarity that breeds contempt" not only by women, but all too often by the physician as well.

Healey believes that trauma, tears, and the destruction of the lymphatic protective power, or large destruction of epithelium, as seen in erosions, are a source of chronic irritation. "Nobody ever saw a cancer arise in a scar, healed by first intention" (Delbet).

It is not necessary for us to side with those who believe that the scar tissue causes the irritation, or with those who assert that the infection and the resultant ectropion and erosion is the real cause, for they usually occur together; and more than 95 per cent of women with cancer of the cervix, lacerations and infection. Perhaps if chronic cervicitis were properly treated, we would have no cancer of the cervix.

Erosions of the cervix and ectropion, due to lacerations, may become malignant. They are distinctly "precancerous" conditions and are curable by simple means, in most cases applicable in the office by any physician.

I shall not detail the pathology and treatment of the infected, lacerated cervix, but shall only mention some points, and I refer you to the paper of Matthews in the Journal of the American Medical Association (November 27, 1926) for details.

The chief symptom is leukorrhea, which should never be allowed to continue, because it always indicates infection of the cervix. Lacerations cause ectropion with exposure of the endocervical mucous membrane and glands to infection. This results in profuse mucous secretion followed by erosion, hyperplasia and hypertrophy of the whole cervix, Nabothian cysts, blood and lymph stasis, and epithelial cell proliferation. With reference to this proliferation, Matthews says: "It is only a step from this extreme cell proliferation with an orderly arrangement that occurs in hyperplastic cystic cervicitis, to the disorderly arrangement found in cancer." The necessity of prophylaxis is therefore quite apparent and should be undertaken early in order to prevent long continued irritation and the necessity for operation.

The treatment par excellence is the "stripe" cautery method of Dickinson, by which the eroded, recently lacerated cervix, so commonly seen eight or ten weeks after labor, can he healed and rolled in, from four to eight weeks. Three or four radial "stripes" are made with the cautery, on each lip of the cervix, extending from well up in the canal, outward to the limit of the erosion.

Nabothian cysts remaining between the stripes should be punctured. Because of the small amount of pain, it may be used as an office procedure. Old, deep infections may require deeper cauterization under anesthesia. Operations upon the cervix will be obviated by this procedure in most cases. Of course deep tears must be repaired. In a few cases, amputation of the cervix by the Schroeder or Sturmdorf technic may be necessary.

Matthews' results, in the earlier cases, were 80 per cent cured, and 20 per cent improved; none unimproved. In the older, deeper infections treated by deeper cauterization under anesthesia he had 51 per cent cured, 33 per cent improved, and 16 per cent unimproved. His results, following the Sturmdorf amputation of the cervix, were 70 per cent cured, 23 per cent improved and 7 per cent unimproved. Others have had similar success.

We have been successfully using the same methods for a shorter time, but we feel, for the first time, that we can cure "leukorrhea." Leukorrhea is the chief symptom of cervicitis, the precursor of cancer of the cervix.

I again quote from Matthews: "Let every gynecologist realize his unique privilege in that his specialty presents a condition which develops within the field of his vision and touch, cervicitis, a common precursor of cancer. Let every chronic cervicitis be approached, not as a cervical catarrh, or an hypertrophy, or laceration, but as a prologue of an epithelial drama whose curtain may be a malignant death."

SUMMARY

The opportunities of the family physician in the problem of control of cancer include public education, periodic pelvic examination, early diagnosis, biopsy and curettage in all suspicious cases; insisting upon immediate treatment and an understanding of modern therapeutic measures. His great opportunity, however, lies in the fact that the precancerous conditions are easily accessible for diagnosis and treatment, which in most instances can be done by any physician,

in his office, with the assurance of success in more than 80 per cent of cases.

The specialist sees relatively few cases; the family physician many. Therefore the prevention of cancer of the cervix uteri, as far as it may be possible by curing the precancerous condition, is distinctly the duty and the great opportunity for service of the family physician.

THE COST OF MEDICAL CARE

How many people with cancer are there in the United States who are not able to pay for the medical care which they require? To how many are facilities for free treatment available? To what extent are cancer patients able to pay for the medical attention which they require? These are questions for which there are as yet no answers.

An organization was formed at Washington on May 17, 1927, to make a thorough investigation of the availability of medical care for those who need it because of cancer and other diseases. It is hoped that within five years information of much practical value may be collected. The work of the Committee promises to be of far-reaching consequence. The new organization is called "The Committee on the Cost of Medical Care."

The first meeting was called a "Conference on the Economic Factors Affecting the Organization of Medicine." It was attended by 60 physicians, sanitarians, economists and "other persons representing the general public." Dr. George A. Soper, Managing Director of the American Society for the Control of Cancer, was one of those who were invited to be present. The following persons subscribed their names to the call for the meeting: Lewellys F. Barker, M.D., William Darrach, M.D., Michael M. Davis, Ph.D., Walton H. Hamilton, Ph.D., J. Shelton Horsley, M.D., John A. Kingsbury, C. C. Pierce, M.D., W. S. Rankin, M.D., W. C. Rappleye, M.D., Winford H. Smith, M.D., John Sundwall, M.D., Edgar Sydenstricker, L. R. Thompson, Ray Lyman Wilbur, M.D., Prof. C.-E. A. Winslow, H. H. Moore.

Dr. Louis I. Dublin, in an address, stated that the Bureau of Labor Statistics gave the cost of medical attendance as $60 per family per year. Detroit's family welfare agency found workmen's families paid $80. The employees of the Metropolitan Life Insurance Company also paid $80 a year for medical attendance. It was estimated that of the 70,000 million dollars of our annual income from all sources 3,000 to 4,000 million are spent on illness, including payments to physicians, dentists, hospitals, nurses and druggists. Apparently the physician gets half of this amount; dentists about 20 per cent; druggists and instrument makers another 16 per cent for medicines, dressings, and various appliances; hospitals 7 per cent; nurses 5 per cent. As a result, baffling problems connected with diagnoses, long illnesses, and surgical costs occur. It is estimated that 10 per cent of the treatment of the sick is now carried on in dispensaries throughout the country.

The family incomes from which the cost of illness must be paid were surveyed in a paper by Dr. Leo Wolman, who stated that 67 per cent of our population had family incomes of $1,450 a year or less and only 6 per cent had incomes of $2,900 or more. He found that 90 per cent had annual incomes of less than $2,000.

Dr. Michael M. Davis said that the lower the income the more the sickness was likely to be. About a quarter of all the families of the country had serious illness in the course of a year and for this they had to pay between $100 and $500. Whereas for 75 per cent of the population the annual cost of sickness was bearable, for the other quarter it was heavy. It was desirable to know how much a family of moderate means received in the way of prevention and care of sickness for $40 or $80. It was not only inadequate income but inadequate medical service which was at fault. This inadequate medical service was in itself the cause of sickness.

Since the meeting of May 17, a bulletin of information has been issued from the temporary office of the Committee, 1724 I Street, N.W., Washington, D. C. From the bulletin we learn that the following program has been planned:

(1) To conduct an analysis of the problem of medical organization, particularly of its economic factors.

(2) To plan a series of researches on the basis of the proposed analysis, utilizing, as the committee may see fit, the outline of studies prepared by the Committee of Five appointed at a preliminary conference held in Washington April 1, 1926. These studies are to be assigned to various interested agencies and individuals, and they will be subsidized only when they can not be properly undertaken without financial aid.

(3) To conduct a limited number of studies when it becomes evident that they can not be handled adequately by any existing agency.

(4) To arouse the interest of professional groups and the public in the facts regarding medical service as they become available, particularly in the results of the committee's studies. The committee will promote discussion by medical, public health and economic agencies, arrange or encourage addresses before organizations of the "consuming public" and conduct various kinds of conferences. The publication of articles in professional and popular journals will be provided, and reports on the committee's researches be issued.

The new committee numbers twenty. Ray Lyman Wilbur is chairman and C.-E. A. Winslow, vice-chairman. There is an executive committee of four, consisting of C.-E. A. Winslow, Chairman; Michael M. Davis, Haven Emerson and P. Shelton Horsley. The committee is to meet once a month. Of the annual budget of $40,000, $10,000 has been granted by the Twenticth Century Fund and $15,000 has been received from the Milbank Memorial Fund.—Campaign Notes, Am. Soc. Control of Cancer. Sept., 1927.

CONTROL OF THE PYLORUS*

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PREVIOUS to the introduction of the *x*-ray, medical men looked upon the test meal as being of great diagnostic importance. With this more exact method of discovering cancer, gastric analysis, in the minds of many men, certainly, seemed of questionable value.

The association of no acid with pernicious anemia and of hydrochloric acid in chronic ulcer, however, still makes the tube necessary and stimulates us to try in every possible way to learn more about the regulation of the hydrochloric acid.

A *satisfactory* explanation of why the curves of acid in ordinary gastric analysis should vary so much from the concentration of 0.5 per cent found in pure gastric juice in dogs over thirty years ago by Pavloff, and confirmed in man by Carlson and others, has never been offered. The fact that such curves, therefore, can be produced clinically is of great importance. This has recently been accomplished by Doctors Berglund and Walquist using hypodermic injections of ergamine and studying the secretions of the fasting stomach.

The further observation that no acid could be produced by ergamine in cases of pernicious anemia may be of considerable practical importance in separating the achylias. If, in normal individuals, the concentration of hydrochloric acid in pure gastric juice is 0.5 per cent, what are the various factors modifying this secretion to keep it down to the 0.2 per cent which is ordinarily found?

In 1914, Rehfuss and his co-workers, by the use of the Einhorn tube, gave us an exceedingly valuable method of studying gastric physiology. Their work showed a confirmation of Boldyreff's work on dogs ten years before. Boldyreff had concluded that gastric acidity was kept around .15 to .2 per cent by reflux of duodenal contents, principally by the pancreatic juice, and that high acidity tended to open the pylorus.

Rehfuss and his co-workers found both bile and trypsin in the gastric contents and they described a variety of acidity curves in the same individuals with different meals and in different individuals with the same meal.

About 1920, a group at Guy's Hospital began working with fractional analysis. Bennett and Ryle examined 100 healthy students. They found all kinds of curves of acid, varying from a straight line to a peak of .25 per cent; but in 80 per cent there was some similarity in the type of curves.

Bolton and Goodhart, and Baird, Campbell and Hearn, by the estimation of the total chlorides, were able to straighten out some of these curves. They found that some cases with high acidity might be explained by defective neutralization, and some cases of no acid or low acid explained by excessive neutralization.

They found in some cases evidence of neutralization where they felt they had entirely eliminated the possibility of regurgitation. They, therefore, fell back on an antral mucus, which Ivy has shown to be alkaline, to explain neutralization in some cases.

There are three tests of stomach contents which are conclusive as to duodenal regurgitation: one is the presence of bile, one, trypsin, and a third the inversion of cane sugar (the latter only permissible in cases of complete achylia). Although the workers at Guy's admitted the importance of pancreatic juice, they used only bile as a positive test for regurgitation in their experiment. Their possible error will be discussed later.

In a study of a series of cases on the medical service of the University Hospital by Grace Medes and myself we decided to give particular attention to the effects of various dilutions of acids: first, on a group of complete achylias in pernicious anemia; and, second, on a miscellaneous group.

Twenty-two examinations were made on cases as follows:

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

10 total achylias, giving no acid on fractional meals or after injection of ergamine (pernicious anemia),
4 duodenal ulcers,
1 retroperitoneal tumor,
1 asthma,
1 compression myelitis,
2 simple achylias,
1 pyloric obstruction,
1 normal,
1 pylorectomy by the Polya method.

The contents of the fasting stomach were removed through the Rehfuss tube with the olive located in the lower part of the stomach. The stomach was then washed at three to five minute intervals with small amounts of water or of the reagents selected and samples immediately withdrawn; or the reagents allowed to remain in the stomach and portions fractioned out in five to ten minute intervals.

The samples obtained were examined by Doctor Grace Medes for bile and tested for the presence of trypsin, by Folin's method, and in three instances for reduction of cane sugar. The first ten experiments were on cases of pernicious anemia.

The fasting contents were removed and the stomach washed several times with 250 c.c. of water at 37 degrees and completely emptied after each washing. Another 250 c.c. were then introduced and samples removed at once and after ten minute intervals for fifty minutes. These samples were tested for bile, trypsin activity, and sucrose. The last named were tested for by incubating a few c.c. of each sample with a solution of cane sugar and the solution tested, after four hours, with Benedict's reagent for reducing substances. The solutions used were water, sodium carbonate, and various strengths of acid from .09 up to .4 per cent.

One fact brought out by these data is the frequency with which trypsin and bile appear independently. In the fasting contents trypsin was present in all cases examined, while in pernicious anemia bile was present in seven out of nine cases and the miscellaneous cases in four out of nine.

While the occurrence of bile without tryspin is rare, the occurrence of trypsin without bile appears with considerable frequency, and in one case bile was absent during the entire experiment, although trypsin appeared repeatedly.

Rehfuss and Hawk, in 1915, found bile in 36 out of 67 cases tested and trypsin in 34 out of 36.

Baird, Campbell and Hearn, in 1924, failed to recognize this fact in discussing the neutralization of the gastric acidity. They aspirated simultaneously from tubes in the stomach and duodenum. They found that when bile was flowing from the duodenal tube none was obtained from the stomach, and they concluded that the neutralization of the gastric acidity which occurred in these experiments must be due to the alkaline secretion of mucous glands of the pylorus. There is, however, evidence of anatomical as well as of physiological nature, that bile and pancreatic juice may enter into the duodenum separately.

As is well known, the pancreatic duct and the bile duct usually enter the duodenum through the common duct. Baldwin, however, has shown that in 25 per cent of the cases investigated by him the ducts open separately.

There is no evidence to show that the secretions from the gallbladder and the pancreas always flow at the same time, and it seems quite reasonable to assume that one might get bile containing little or no pancreatic secretion.

Further, Baldwin found that the accessory duct, the duct of Santorini, which opens about three-fourths of an inch to one inch higher up than the common bile duct, was patent to injection in 77 per cent of the cases and patent to dissection in over 85 per cent of the cases. He found, also, in some cases that this duct was large and apparently performed most of the work; in others it was smaller and sometimes entirely functionless.

It seems reasonable to suppose that pancreatic juice might flow to a varying extent through this duct even when the common duct is not functioning and no bile is getting into the duodenum; and in the cases pictured by Baird, Campbell and Hearn, where a duodenal tube was placed at the level of the ampulla, and the bile removed by continuous aspiration, it may be that bile-free duodenal content containing pancreatic juice was secreted into the duodenum through the accessory duct and regurgitated into the stomach.

In the washings which followed the fasting contents, regurgitation was found most frequently with the use of water, about the same number

of times with sodium bicarbonate, and with decreasing frequency under the influence of acids of increasingly greater concentration. Where there was strong acid in the fasting stomach, as in a case of duodenal ulcer, it disappeared rapidly by keeping 250 to 300 c.c. of water with 1 per cent sodium bicarbonate in the stomach. Water leaves the stomach very rapidly as shown by Ivy. This is evidently not in harmony with Boldyreff. However, when the concentrations of 0.5 per cent HCl were reached, the patient usually either vomited or felt definite symptoms of gagging, and this was almost invariably accompanied by the passage of bile and pancreatic juice in large amounts through the pylorus. We therefore used 0.3 per cent HCl in most of our cases and found that unless very large amounts were used gagging seldom occurred.

The ease with which the gastric content could be kept acid was also quite striking in the complete achylia cases. Hurst found that two drams of dilute HCl if given just before and during a fractional meal would give a normal curve of acid in cases of pernicious anemia, the peak of one of his curves going to over 80, or .29 per cent acid.

Some of our cases tolerated this percentage of acid very well for periods of thirty to forty minutes. Three cases, on the other hand, began gagging and vomited on .09 per cent acid, and complained of intense burning just below and to the left of the xyphoid, about the location of the lower end of the esophagus. It was further noted that even where acid was high on the fasting stomach it disappeared when about 250 or 300 c.c. of weak sodium bicarbonate were kept in the stomach for a very brief time.

In the pernicious anemia cases, the regurgitation occurred in 100 per cent of the cases in which the fasting contents were tested, in 92 per cent of the water washing cases, 91 per cent of the 0.09 per cent HCl samples, and in 62, 44 and 31 per cent with 0.14, 0.2 and 0.3 per cent HCl solutions respectively.

The records for miscellaneous cases are not dissimilar except for the frequency of regurgitation in the presence of water, which was somewhat less (74 per cent), probably indicating decreased tonus of the pyloric sphincter in pernicious anemia.

The decrease in the tendency of regurgitation to occur in the presence of acid is probably due to a direct effect on the pyloric sphincter and not to inhibition of the secretion of either bile or pancreatic juice, because it has been shown that the secretion of bile and pancreatic juice is stimulated, rather than inhibited, by acids. This fact was early brought out by Bayliss and Starling and confirmed by Pavloff. They found the secretion decreased by alkalies.

Some light may be thrown upon the mechanism by which the decrease of regurgitation with ingestion of acid is brought about by a consideration of our patient who had undergone a Polya resection and in which the entire pylorus, as well as the pyloric sphincter was removed.

Tryptic digestion was secured from all but one of the samples recovered. Bile was present in almost all and no sample was negative for both. This experiment seems to indicate that bile and trypsin are presents in the duodenum a considerable portion of the time, but are prevented from entering the stomach for brief periods during which the plyorus is closed.

Ryle, in 1926, discussed the mechanism of regurgitation at length and he felt that there was a more or less constant "to and fro" movement between the duodenum and the stomach and that any stimulus that would increase the tone of the musculature including the pyloric sphincter would tend to decrease the amount and frequency of regurgitation.

Carlson has shown that usually the pylorus is in a state of moderate tonus, with periodic variations between extreme spasm and complete relaxation, and that mechanical or chemical stimuli or irritation of the duodenal mucosa may bring about contractions of the pylorus. This might be the explanation of our results.

May we conclude then that the pylorus for the most part is normally in a state of slight tonus and that in *achylia* is in marked relaxation, except when stimulated to close; that, as a result of periodic movements in the upper duodenum as described by Hicks and Visher in 1915, the duodenal contents are forced into the stomach at moments when pressure in the duodenum rises above that in the stomach, and that the contents of the stomach may pass back into the upper duodenum as the period of relaxation follows.

These views are supported by our findings of fractional test meals, regurgitation of either bile or tryspin occurring in 100 per cent of the cases.

In two of them both bile and trypsin were present; in one of the others bile appeared without trypsin and in the remainder trypsin without bile.

Regurgitation tends to occur in increasing amounts in the last fractions removed as the stomach emptied. This phenomenon was observed in our previous experiments and has been mentioned frequently by other workers (Ryle and Ivy).

SUMMARY

Regurgitation of the duodenal contents into the fasting stomach occurred in 100 per cent of our cases. It may occur in the presence of a test meal, or any of the reagents mentioned above.

HCl in 0.9 per cent solution inhibited regurgitation somewhat more than water and $NaHCO_3$ while more concentrated acids (up to 0.3 per cent) decreased it in about 30 per cent of our cases.

Regurgitation takes place with special frequency as the stomach is emptied, regardless of the type of the meal employed.

The regurgitated material may include bile, trypsin, and secretions of duodenal mucosa. These may occur together or separately.

Bile is regurgitated rarely without trypsin and trypsin much more frequently without bile. The ratio of bile to trypsin increased in the presence of acid.

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BISMARSEN

The Council on Pharmacy and Chemistry publishes a preliminary report on Bismarsen, the name given by the Abbott Laboratories to a new derivative of arsphenamine containing bismuth and proposed for use intramuscularly in the treatment of syphilis. Bismarsen is the sodium salt of a bismuth derivative of arsphenamine methylene sulphonic acid, the exact structural formula of which has not been established. The Council reviews a report of clinical trials made by Drs. Stokes and Chambers and of a study made for the Council. The Council finds that the available evidence is insufficient to permit the acceptance of the drug for New and Non-official Remedies; however, the generally favored character of the reports together with the fact that Bismarsen is a chemical substance of controlled composition is sufficient to warrant its further trial by physicians with due recognition of the fact that the drug is still in the experimental stage. For the information of those who desire to use this compound, the Council publishes a description of the chemical properties, the actions, uses and dosage of the drug. (Jour. A. M. A., July 16, 1927, p. 204.)

FROM JUDGE GARY'S WILL

I earnestly request my wife and my children and descendants that they steadfastly decline to sign any bonds or obligations of any kind as surety for any other person or persons;

That they refrain from anticipating their income in any respect;

That they refuse to make any loans except on the basis of first-class, well-known securities;

And that they invariably decline to invest in any untried or doubtful securities or property or enterprise or business.

They should reject any representations or opinions of others if involved in any doubt.

They will be approached frequently with suggestions for investment that are not entitled to be relied upon from a business standpoint.

I hereby direct that no legatee, devisee or beneficiary of a trust under this will shall ever, under any condition, be permitted to anticipate, convey, assign, mortgage, encumber or charge any legacy, devise or income payable to him or her under this will, or any part thereof, before it is due and payable.

THE EVALUATION OF A GASTRO-INTESTINAL REPORT*

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IN the business world, it has been found of profit to take an inventory at certain regular stated periods, appraising the value of the stock on hand, and to take active measures to get rid of waste accumulation. In the roentgenologic world, it is of benefit to take inventory of our roentgenologic knowledge, to appraise its value both from an academic and clinical standpoint, to clear off from the shelves of our minds what we have learned to be of little value, and to stimulate ourselves toward the acquirement of what will be a benefit to our patients. We will, therefore, for a few minutes take stock of our knowledge of the *x*-ray examination of the gastro-intestinal tract.

In starting this inventory, we must bear in mind the basic principles of an *x*-ray examination, whether by the film method or by the fluoroscope. An *x*-ray is simply a record of density of the part under examination. In order to produce records of maximum density, it is important to introduce into the digestive canal an insoluble salt of barium. As the patient swallows the opaque medium, we can visualize the size, contour, and position of the esophagus, and later the stomach and intestinal tract. It is necessary for the examiner to have had enough training and experience so that he can recognize the normal outlines before he concerns himself with questions of diagnosis of pathologic conditions. Unlike most of the other *x*-ray examinations of the body, such as the skull and long bones, where the parts are motionless, the examination of the gastro-intestinal tract by the fluoroscope will give us a concept of the muscular activity of the digestive canal. We are able to study the function and activity of the musculature. It therefore follows that the *x*-ray examiner will contribute little of importance in the study of a given case unless he brings an experience based on many examinations, particularly those of proven cases. The writer recently received a letter from a physician in which he said that he was having pretty good luck in taking *x*-ray "pictures" but he was having some trouble in interpreting what he saw. In reply I advised him to take a two years post-graduate course in roentgen interpretation before venturing to express diagnostic conclusions. Within the last week a patient came to the University Hospital, stating that he had been told that he had a duodenal ulcer, that he had the week before taken a barium meal after which the examiner had made one large plate and on the next day another plate had been made. At no time during the examination had he been examined with the fluoroscope—another example of fools rushing in where angels fear to tread. One of the difficult tasks of the writer's position is to receive by mail an *x*-ray film of the stomach taken immediately after a barium meal, a four hour film, and a twenty-four hour film, with a request for a diagnosis, a request difficult to answer without calling a spade a spade. It would be hard to estimate the number of physicians possessing *x*-ray machines for whom the subject of gastro-intestinal diagnosis is a closed book. Unfortunately some of them at least do not realize their lack of experience and knowledge. The writer is acquainted with one physician, who, on purchasing an *x*-ray machine, made eight examinations of eight different patients, one plate of each, with eight different diagnoses, all of which were wrong when the patients came to operation. We may, therefore, say very decisively that the value of an *x*-ray examination in determining a normal or pathologic condition of the gastro-intestinal tract is directly proportionate to the skill and experience of the roentgenologist.

Granting that a roentgenologist of skill and experience is absolutely necessary in giving out diagnoses of value, we may next discuss the scope and limitations of *x*-ray diagnoses of the gastro-intestinal tract. In considering diseases of the esophagus, we are struck by the fact that the recognition of the average case of carcinoma of the esophagus is made very late in the clinical course. In a perfunctory routine examination of the esophagus, the early manifestations of carcinoma may be easily overlooked.

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

The present methods of diagnosis and treatment of cancer of the esophagus are a crying reproach to our profession. The slightest interference with the lumen or the function of the esophagus should entitle the patient to an esophagoscopy. Only by concentrating our efforts on our technic with the use of barium gelatine bougies and examinations in oblique projections in the prone and supine positions, will we avoid some of the odium which falls upon all of us at the present time.

In *x*-ray examinations of the stomach, the examiner should make use both of the fluoroscope and multiple film exposures. Each method should supplement the other, the one visualizing movement and the other recording detail. Lesions of the upper part of the stomach may be easily overlooked unless the patient is examined in the Trendelenburg position.

The important pathologic conditions of the stomach capable of *x*-ray demonstration are: (1) ulcer of the stomach; (2) carcinoma of the stomach; and (3) ulcer of the duodenal bulb. The ease with which gastric ulcer can be detected depends upon the location of the ulcer and whether the pathologic changes are such as to change the gastric outline. Ulcers involving the lesser curvature of the stomach lend themselves more easily to detection than those on the posterior wall. Superficial erosions of the gastric mucosa may easily escape detection, or if there is simply a disturbance of the rhythm of the peristaltic waves, the conclusions may be indeterminate. If there has been a penetration or a perforation of the stomach wall so that the result is a pocket or niche, the diagnosis is easily made as the appearance is pathognomonic. The roentgenologist is sometimes reproached with the fact that he cannot always differentiate between an ulcer and a carcinoma. However, the same difficulties confront the surgeon, and both the roentgenologist and the surgeon are oftentimes compelled to transfer the burden of diagnosis to the pathologist. Naturally a painstaking technic is of the greatest importance.

The diagnosis of gastric carcinoma is usually not attended with difficulty. This is particularly true of growths which intrude upon the lumen of the stomach. Neoplastic proliferations, however, of the scirrhous type may show only a stiffness and rigidity of the gastric wall, and may on this account be inconspicuous except upon careful serial film examination. In looking at films of gastric carcinoma, one should always remember that a neoplastic infiltration usually is more extensive than the films indicate. While in a general way one may be fairly positive as to whether a given lesion is operable or not, still, in cases of the so-called "leather bottle" type, mistakes may occur. The distinction between syphilis of the stomach and gastric carcinoma is often difficult unless one takes into account the clinical history. In syphilis of the stomach, the gravity of the symptoms is not usually proportionate to the extent of the lesion. Sarcoma of the stomach also shows a decided difference from carcinoma in that the defects shown by the *x*-ray are more extensive in sarcoma than in carcinoma, although the symptoms of the former are less severe.

In looking back over the history of the development of *x*-ray examinations of the gastro-intestinal tract, one is impressed by the fact that during the earlier evolutionary period the final diagnosis lay in massing together of so-called indirect signs. At the present time, however, the roentgen diagnosis is based primarily upon the direct demonstration of the lesion, grouping the so-called indirect evidence as of minor importance. The diagnosis of duodenal ulcer, thanks to the pioneer work of Lewis Gregory Cole and the monumental work of the lamented Carman, now rests upon a very sound basis, primarily upon the fluoroscopic examination and upon the confirmation of the same by the serial film method. It is now possible in the average case to obtain either four or even twelve projections of the pylorus and duodenal bulb on one fourteen by seventeen film. This procedure reduces the cost of the examination and simplifies the labeling and filing of the films, both of which are important in a busy *x*-ray department. The appearance of the duodenum in carcinoma of the pancreas is also fairly characteristic, as pointed out by Crane.

Factors which interfere with the reliability of a gastric *x*-ray examination are: (1) the inexperience of the *x*-ray examiner; (2) the failure to combine both the fluoroscopic and serial film methods; (3) factors arising in the patients: lack of coöperation, either through the mental attitude of the patient or due to a weakness which prevents the patient from assuming the erect position during the fluoroscopic examina-

tion, and obesity with an abdominal wall so thick and rigid that it prevents satisfactory palpatory manipulation of the stomach of the patient.

Usually the physician will accept *x*-ray reports from a roentgenologist of skill and experience, confident that the report will name difficulties which if present will detract from the accuracy of the conclusions. Owing to the fact that many patients have gastric symptoms due to extragastric pathology, it is pertinent to point out that the examination of the gastro-intestinal tract should always be complete and not limited to one organ. The patient should not be referred to the roentgenologist with the simple request for an *x*-ray of the stomach unless it is a question of re-examination. Since the Graham test has amply proven its place in abdominal diagnosis, it follows that this test for gallbladder function should be made an integral part of the usual gastro-intestinal *x*-ray examination. The Graham test and the *x*-ray examination of the gastro-intestinal tract can be carried on successively without a loss of the patient's time.

The roentgenologist should have the privilege accorded him of deciding whether the barium enema should be a part of the routine examination. The patient's time will be conserved by allowing the roentgenologist this privilege.

The writer is not in accord with the sometimes expressed idea that the roentgenologist should be kept in the dark as to the clinical symptoms. There is an important distinction to be drawn between the roentgenologist and an *x*-ray technician. The roentgenologist is a practising physician, should be, and usually is, well-educated in clinical history, modern pathology, and co-related methods of diagnosis. If he acquaints himself with the clinical symptoms, he will be able to stress certain parts of his examination productive of value to the clinician and the patient. The experienced roentgenologist, I think, learns to cultivate a judicial frame of mind, which enables him to derive benefit from the history without prejudicing his conclusions.

CONCLUSIONS

1. The *x*-ray examination of the gastro-intestinal tract is an important aid in the diagnosis of abdominal conditions. It is advisable, however, to be cognizant of the inherent limitations of the method, as well as of its positive advantages.

2. It is important to be familiar with the factors which influence the reliability of an *x*-ray gastric examination.

3. The reliability of a gastric *x*-ray examination is directly proportionate to the knowledge, skill, and experience of the roentgenologist making the examination.

4. Among the factors of minor importance which interfere with the reliability of the examination is the excessive corpulence of the patient, pronounced rigidity of the abdominal wall, and conditions of the patient which interfere with a complete examination.

5. It is important to combine the fluoroscopic and serial film examination in all cases where there is evidence of an organic deformity.

6. In cases where the *x*-ray examination is the principal factor in deciding for or against operative procedure, it is highly advisable to have a second confirmatory examination before pronouncing the final diagnosis.

DIGITALIZATION

The term "digitalization" was coined to signify the full pharmacologic action of the drug to the limit of safety. Laboratorial and clinical investigations have developed the digitalization amount of digitalis to be, for a 150 pound (68 Kg.) adult weight, a minimum of 22½ grains (1.45 Gm.) and a maximum of 33 grains (2.2 Gm). Half the minimum dose may be given at once and then 2 or 3 grains (0.13 to 0.2 Gm.) every six hours, or the other half of the minimum dose may be given on the second day. If the patient needs more digitalis for digitalization, the amount is gradually increased by 2 or 3 grains, perhaps every six hours, until symptoms of digitalization appear. Digitalization should not be attempted if the patient has previously been taking digitalis. The dosage advised must of course be greatly modified with frail, underweight persons. An overweight person, when that weight is largely due to fat, must not be given doses according to his weight. The condition of the patient must also be taken into account. Digitalization means digitalis poisoning. Such poisoning should not be inaugurated excepted by a careful determination of the exact condition of a patient to be treated. The general practitioner should not thoughtlessly digitalize his patient unless he has hospital or other facilities for determining the exact condition of his heart and his excretory ability. (Jour. A. M. A., September 10, 1927, p. 884.)

THE PRINCIPLES OF GASTRIC SURGERY*

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THERE is no group of diseases concerning the treatment of which there is such marked diversity of opinion as the diseases of the stomach and duodenum. Controversy is not confined to the merits of medical or surgical management, but when the latter is clearly indicated opinions are far from unanimous as to the most effective type of operation in the most common of the intrinsic diseases of the stomach, namely peptic ulcer. The more experience acquired in the surgical treatment of lesions of the stomach, the greater the conviction that progress in the management of peptic ulcer will depend on a more intelligent selection of cases for operation and a better appreciation of the general principles of those operations which experience has shown to be worthy of application. I believe that most of the failures of surgical measures to cure peptic ulcer permanently can be attributed to failure in one or both of these respects.

Extravagant claims for any particular type of operation retard progress, and it is timely to consider carefully the circumstances which call for any particular one of the various procedures which have enough merit to be of every-day use. In both malignant and benign lesions of the stomach and duodenum it is a mistake to imply that any single type of operation will always deal adequately with the lesion. The selection of the operation depends on many factors, the chief of which are the condition of the patient, the stage of the disease, the situation and character of the lesion, and the complications which are associated with it. This paper is a discussion of the general principles and applicability of the various operations which merit consideration at the present time in the surgical treatment of diseases of the stomach and duodenum.

POSTERIOR GASTRO-ENTEROSTOMY

The operation of first importance (because it is performed more frequently than any other operation for diseases of the stomach) is posterior gastro-enterostomy. Its value is proved beyond any doubt since in properly selected cases not only does it bring about complete and permanent cure of symptoms but it has one advantage over all other types of operation for lesions of the stomach and duodenum, that is, it is non-destructive. If necessary the anastomosis can be disconnected and the stomach restored to its original condition. It has no disadvantages which do not apply to other operations as well.

Posterior gastro-enterostomy has greatest value in the treatment of chronic duodenal ulcer associated with obstruction. In such cases the results are spectacular and the more marked the obstruction the greater the indication for gastro-enterostomy. As Ryle has expressed this principle, "No attempt should be made to circumvent mechanically a lesion which is producing no considerable mechanical disturbance of function." The reverse of this is also true: the less evidence there is of interference with gastric motility or disturbed function the less is gastro-enterostomy called for and the less the assurance that it will give permanently satisfactory results. It is, however, frequently true that it is the only justifiable procedure in many cases in which no obstruction exists, that is, when the lesion in the duodenum is so situated that local excision with plastic operation on the pylorus is not feasible. The operation is also of great utility for duodenal ulcer in which hemorrhage has been a complication and direct attack on the ulcer cannot be carried out. In such cases the indirect procedure of gastro-enterostomy will insure a high degree of protection against further bleeding and in a large percentage of cases will relieve the other symptoms of ulcer.

Posterior gastro-enterostomy is frequently necessary in cases of gastric ulcer. The simplest principle in the surgical management of gastric ulcer is local excision of the lesion combined with gastro-enterostomy. Inasmuch as many gastric ulcers are situated so far from the pylorus that resection of the stomach involves the sacrifice of a large part of the healthy stomach, the method of complete removal of the lesion, by local excision along with gastro-enter-

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ostomy to protect against further ulceration and motor malfunction, should not be lightly abandoned for a more radical procedure. The value of gastro-enterostomy in correcting disturbed gastric function is illustrated in the management of gastric ulcer. Experience has shown that even if deformity does not follow removal of a small ulcer of the stomach by excision, and the pylorus and duodenum are normal, in about 50 per cent of the cases such excision alone fails to afford permanent relief of disordered gastric function. The fact that in order to secure the best results in these cases gastro-enterostomy must be added to an operation which leaves in reality a normal appearing stomach, pylorus, and duodenum, conclusively proves that in the stomach affected with ulcer gastro-enterostomy brings about changes in the secretory, sensory, and motor functions which are essential to a good result. Another extraordinary fact about gastro-enterostomy for gastric ulcer is that some of the large irremovable ulcers, particularly in the fundus of the stomach, are cured by gastro-enterostomy alone. Although gastro-enterostomy alone should not be depended on if the ulcer can be removed, the definite curative value which it exhibits in those cases in which the lesion cannot be removed, shows that it exerts an effect on the functions of the stomach which frequently permits such lesions to heal.

Posterior gastro-enterostomy for cancer of the stomach occasionally affords great relief in cases of marked obstruction when the growth is small but irremovable because of penetration into extragastric tissues. It should be pointed out, however, that in cases not suitable for the operation, that is, when the disease is extensive, it is unlikely that any appreciable measure of relief will follow the operation. The value of the operation, also, as a first-stage procedure in a contemplated resection of the growth is occasionally seen, although, if the growth is removable, the preoperative preparation of the patient with obstruction usually enables the surgeon to carry out the resection as a primary procedure with as much safety as a two-stage operation would insure.

ANTERIOR GASTRO-ENTEROSTOMY

Anterior gastro-enterostomy is an excellent substitute for posterior gastro-enterostomy and all the advantages of the latter apply to the former. The value of anterior anastomosis has been overlooked during the last few years and its usefulness, if only as a substitute for posterior gastro-enterostomy, is great. While it is occasionally true that malformations due to anatomic abnormalities or inflammatory reaction prevent posterior gastro-enterostomy being satisfactorily carried out, it is extremely rare that anterior anastomosis cannot be performed. The disadvantage of anterior gastro-enterostomy is that in some cases the proximal loop does not drain satisfactorily and secondary entero-anastomosis occasionally becomes necessary. For this reason the entero-anastomosis is often carried out at the same time as the anterior gastro-enterostomy; it is a wise precaution. One of the definite advantages of the anterior anastomosis is that when ulceration recurs at the anastomosis, it is more easily dealt with than when it develops at the site of a posterior anastomosis.

PYLOROPLASTY

Pyloroplasty is occasionally preferable for chronic duodenal ulcer or chronic gastric ulcer when the lesion is in the pyloric end of the stomach. There are many methods of performing pyloroplasty, the most important of which are the Heineke-Mikulicz, Finney, C. H. Mayo, Judd, and Horsley, but the operation, regardless of the type, has its limitations. The chief objection to pyloroplasty is the fact that in a considerable percentage of cases of duodenal ulcer there are multiple lesions. Careful examination of the duodenum when symptoms of ulcer have lasted for many years will often show multiple scars encircling the duodenum. Any type of operation which deals only partially with these lesions does not afford the same prospects of permanent relief of symptoms and of permanent healing as a procedure which permits healing to take place regardless of the extent or the multiplicity of the lesions. Another limitation concerns the situation of the ulcer and the mobilization of the duodenum, and successful pyloroplasty depends to a large extent on the success with which such mobilization can be carried out. On the other hand, pyloroplasty has certain advantages, one of which is that it may include a direct attack on the ulcer, a procedure of particular value in the bleeding type. Another is that should ulceration recur or contraction develop to the point of obstruction following pyloroplasty,

a secondary operation, usually gastro-enterostomy, can be carried out without great difficulty. Pyloroplasty has its greatest value in the treatment of ulcers near the pylorus on the anterior wall of a duodenum which can be easily mobilized and in which the inflammatory tissue about the ulcer is not extensive.

GASTRODUODENOSTOMY

In selected cases gastroduodenostomy, that is, anastomosis between the stomach and the duodenum without cutting the pylorus, is a valuable procedure. Its particular indication is in cases with marked obstruction in which gastro-enterostomy is contraindicated because of technical difficulties and when the duodenum is large enough for a satisfactory opening to be made between the stomach and duodenum in front of the site of obstruction. The Kocher method of gastroduodenostomy, that is, between the pyloric end of the stomach and the second and third part of the duodenum, has been abandoned because of the inadequate drainage which it provides and the tendency for the opening to contract further.

PARTIAL DUODENECTOMY

Partial duodenectomy is chiefly employed for posterior ulcers of the duodenum, particularly of the bleeding type. If such ulcers can be separated from their posterior attachments, if they are of considerable size and not too far from the pylorus, the duodenum can be mobilized to a sufficient distance below the ulcer to permit direct approximation of the end of the stomach to the end of the duodenum after the section of duodenum has been removed. While this procedure has limited indications, it is a most important procedure and is safe when it can be satisfactorily carried out.

JEJUNOSTOMY

Jejunostomy for lesions of the stomach and duodenum is occasionally of great value in cases of high-lying, benign, and irremovable lesions. In such cases a radical operation is unwise because it involves the removal of such a large part of the stomach, and the induration may be so extensive that satisfactory gastro-enterostomy cannot be carried out. Jejunostomy, providing as it does complete rest for the stomach, is a procedure which should always be in mind. In some instances the operation has even brought about complete cure. If there is doubt as to the character of the lesion, that is, whether or not it is malignant, jejunostomy can be used as a method of preparation for a second operation later if the patient continues to improve but the lesion does not entirely heal or disappear. The operation is also occasionally of value as a factor of safety in extensive and difficult operations such as total gastrectomy. In these cases the jejunostomy tube permits nourishment being given to the patient in adequate amounts without menace to the suture lines.

PARTIAL GASTRECTOMY

Partial gastrectomy affords the only possible cure for gastric carcinoma. It is one of the most favored types of operation for chronic gastric ulcer and it is also indicated in recurring ulcers following operations. As a primary procedure for chronic duodenal ulcer the operation is, I believe, unwarranted and will never become an operation of choice.

There are two basic types of gastric resection: the Billroth I and its modifications, and the Billroth II and its modifications. For gastric carcinoma the latter type I believe to be the more satisfactory. It insures wider excision of the growth and its regional lymph nodes; and if gastro-intestinal continuity is restored by anterior anastomosis between the stump of the stomach and the jejunum, the resection may, if necessary, include the entire stomach. A direct anastomosis between the end of the stomach and the end of the duodenum is an excellent operation for small growths at the pylorus. The disease can be eradicated and an anastomosis made without undue tension on the suture lines. The segmental or sleeve resection is essentially Billroth I in type.

The chief objection to the Billroth I type of resection in carcinoma is that if the disease recurs, it is likely to do so in the region of the anastomosis or in the tissues posterior to it. The resulting obstruction in some cases necessitates a secondary operation to insure relief.

Resection by the Billroth II method, on the other hand, is rarely followed by any difficulty in the stomach. Recurrence, when it does take place, is usually in the liver or in some distant organ and the patient is seldom a victim of the distressing symptoms attending recurrence in the stomach. For this reason partial gastrectomy as a palliative operation for carcinoma of the stom-

ach is rather frequently indicated, that is, when it is obvious that the disease cannot be cured. The patient can be protected against an unpleasant sequence of events if the growth is removed.

Partial gastrectomy for gastric ulcer is an excellent procedure and can be justifiably employed in a large percentage of cases. For example, of the cases of gastric ulcer in which operation was performed in the Clinic during the last year, partial gastrectomy was performed in 35 per cent. The chief indication for partial gastrectomy in cases of gastric ulcer is the large ulcer with a deep crater and extensive induration about the ulcer. The possibility of such lesions being malignant necessitates a clean-cut removal of the lesion when possible and although this can be done by local excision with knife or cautery, yet partial gastrectomy when the lesion is favorably situated involves little more risk and the results are excellent. I believe, however, that it is unnecessary in such cases to remove a large part of the stomach since this produces a profound effect on the secretory function of the stomach, an effect which may not be compatible with good health. Partial gastrectomy is also indicated when other operations have failed to cure a chronic peptic ulcer. It is often preferable for gastrojejunal ulcer and for recurring ulcer in any situation after a well accepted type of operation has failed to cure or control symptoms. Fortunately in such cases partial gastrectomy can be carried out without great risk so that the secondary operation in such cases should not be avoided because of supposed risk.

The attempt to establish partial gastrectomy as an operation for primary duodenal ulcer is a trend, I believe, in the wrong direction. Progress will more likely result from simplification of methods of treatment rather than from making them more complicated, particularly when undertaken for a lesion which does not become malignant and which is not in the stomach.

TREATMENT OF PERNICIOUS ANEMIA

Minot and his co-workers report good results in the treatment of pernicious anemia by means of a diet composed especially of foods rich in complete proteins and iron—particularly liver—and containing an abundance of fruits and fresh vegetables and relatively low in fat. Koessler and his associates believe that in some cases, at least, the phenomena accompanying pernicious anemia are the result of long continued deficiency in vitamin A and possibly also in vitamins B and C and propose the treatment of pernicious anemia with a high caloric diet rich in vitamins. Therefore Minot and Koessler would prescribe an adequate general diet, including a large quantity of liver and kidney. Minot and his co-workers would reduce the fats, whereas Koessler and his associates declare that butter, cream, milk and cod liver oil should be partaken of in large amounts. Macht reports that the blood serum of patients with pernicious anemia contains a toxin, and that this blood serum can be detoxified by irradiation with ultra-violet rays. Furthermore, he found that the effect of ultra-violet rays could be increased by introducing into the serum to be treated dyes which act as sensitizers. Since liver is the storehouse for blood pigments, some of these pigments may help increase the effectiveness of light and thus some of the good effects of liver diet may be connected with the liver pigments that are administered. (Jour. A. M. A., September 3, 1927, p. 793.)

SOME RECENT OBSERVATIONS ON THE FAT-SOLUBLE VITAMINS

The concentrate of vitamins A and D represented by the nonsaponifiable fraction of cod liver oil is not effective in herbivora unless it is fed dissolved in oil. These observations have been confirmed in the case of an omnivorous species. This makes one question the advisability of attempting to supply vitamins to man in the form of dry concentrates unless the latter are given in oil or in close proximity to a meal that carries fat. The ready solubility of vitamins A and D in fats made it seem likely that liquid petrolatum would also be a good solvent. Since the latter is not absorbed from the gastro-intestinal tract, and since it has a widespread use as a laxative, it is important to ascertain whether the fat-soluble vitamins in the food are liable to be "diverted" from alimentary absorption by the presence of the non-absorbable liquid petrolatum solvent. It has been shown that liquid petrolatum may act as a solvent for vitamin A, thereby depleting ingested foods of their supply of this factor. A comparable influence on the antirachitic vitamin has not yet been demonstrated, though it may naturally be expected if liberal amounts of liquid petrolatum are ingested. Attempts have been made to increase the antirachitic potency of cod liver oil by irradiation. The evidence indicates that this is not feasible. (Jour. A. M. A., August 27, 1927, p. 694.)

THE TREATMENT OF CHRONIC ULCERATIVE COLITIS*

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THERE have been about as many types of treatment for chronic ulcerative colitis as there have been contributors to the literature on the subject. This is in contrast to the generally accepted, fairly well standardized treatment of peptic ulcer. Chronic ulcerative colitis, while not as common as peptic ulcer, is undoubtedly more serious and demands standardization of treatment.

In the main, physicians interested in the treatment of chronic ulcerative colitis have been divided into three groups: (1) those who believed it was an infectious process and advocated its management as a chronic, severe, debilitating infection; (2) those who believed it was metabolic in origin and searched for some underlying deficiency, and (3) those who believed it was a surgical problem and advocated various operations.

Inasmuch as the infection was attributed to varied causes, such as *Bacillus coli,* streptococci, staphylococci, Welch's bacillus, *Bacillus pyocyaneus, Bacillus dysentericus,* entamebas and other organisms, various medicaments found favor with physicians who believed it to be of infectious origin. Usually a bland diet of low caloric value was given. Numerous drugs have been used for irrigations and instillations of the rectum, and for intravenous, subcutaneous, and deep muscular injections. Favored among those used for irrigations were argyrol, silver nitrate, tannic acid, boric acid, sodium chloride, potassium permanganate, and, more recently, mercurochrome, acriflavin, acriviolet, and gentian violet. For instillations witch-hazel, olive oil, bismuth and combinations of many of the foregoing drugs were used. Irrigations have been given as copious colonic douches, as through-and-through drainage with appendiocostomy or cecostomy, and by the Einhorn tube.[1] Arsenic in various forms (particularly arsphenamine) and mercurochrome have been given intravenously. Antidysenteric serum and vaccines of various organisms and combinations of various bacteria have been injected. Blood transfusions have frequently found favor. Treatment with drugs used in amebiasis at times gave temporary relief.

Advocates of the metabolic and deficiency theory found support in the fact that liberal feeding of articles of food of which patients had been deprived resulted in improvement; mental hygiene and sun-baths resulted in marked systemic improvement. Furthermore, the administration of certain drugs, particularly iodine, brought about remissions.[2]

Among the advocates of surgical measures were those who considered the disease as primarily a surgical problem, and those who resorted to surgery when medical management failed. In the latter group were physicians who considered the disease either from an infectious or from a metabolic standpoint.

Cecostomy, appendicostomy, ileostomy, colectomy, ileosigmoidostomy, and various rectal operations have been performed for chronic ulcerative colitis. Ileostomy effected complete short-circuiting of the fecal stream and ileal secretions; appendicostomy and cecostomy accomplished chiefly an ostium for irrigations. Colectomy, with enormous associated risk, removed the major part of the diseased tissue. Ileosigmoidostomy, also with considerable risk, accomplished a part of what ileostomy did without the disadvantages. Drainage of perirectal abscesses, cutting and dilating strictures, and scraping the rectum were procedures occasionally employed.

Recent investigations of the disease seem to have established the fact that it is due to infection of the colon by a specific causative organism.[3-8] Not only is there ample experimental evidence of this but the clinical history depicts an infectious disease. The organism in question is a gram-positive, lancet-shaped diplococcus of characteristic morphologic and biologic properties. The salient clinical feature of the disease is the frequent passage from the rectum of a discharge containing blood and pus, the amount of discharge being directly proportional to the extent of involvement of the colon and the severity of the infection. If only the rectum and sigmoid are affected blood and pus may be evac-

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uated and yet the patient may complain of constipation, because the stools may be scybalous. If the entire colon is affected there is a great deal of discharge in twenty-four hours. The term diarrhea applied to this disease is confusing, since the stools are commonly not watery. Evacuations are frequently associated with a gruelling cramp or tenesmus; pain between evacuations is exceptional. Anemia is invariably present at some stage of the disease. Fever of the septic type occurs in acute fulminating cases, and low-grade fever frequently accompanies acute exacerbations in long-standing cases. Depleting all good wholesome foods with a minimum of roughage. Patients are urged to take milk, eggs, orange and tomato juice, well-cooked meats, bouillons, liver, bananas, and vegetables and fruits having a minimum of residue.

In a certain number of cases other supportive measures are necessary. Kaolin and bismuth have proved valuable adjuncts in the treatment. Opium may be administered to relieve pain; hot abdominal stupes occasionally afford relief. The administration of tincture of iodine by mouth, as described by Logan, has definitely produced remissions in certain selected cases. Of the

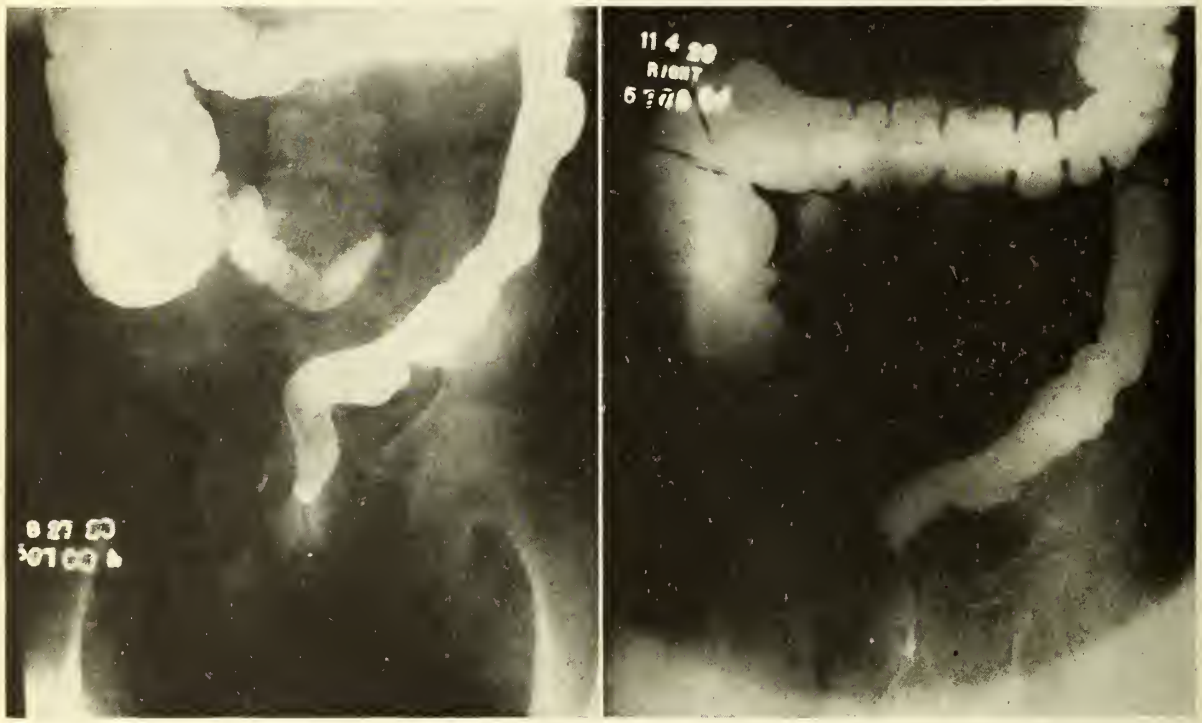

Fig. 1. Roentgenogram of colon after barium enema of a patient, aged sixty-nine, with a fifteen-year history of chronic ulcerative colitis, before and after treatment.

chronic invalidism is characteristic of the disease.

Experimental and clinical evidence suggests that distant foci of infection are related to the disease in the colon. Present methods of treatment are based on the supposition that the disease is due to infection from a distant focus in the form of repeated showers of bacteria which become localized in the colon. Attempts are first made to immunize the patient against the diplococcus by the subcutaneous administration of vaccine and filtrate. The second important part of treatment is the eradication of foci.

The diet should be liberal and patients allowed

aniline dyes, gentian-violet offers considerable promise and its administration is rational inasmuch as in rather low dilutions it kills the diplococcus in the test-tube. Recently in the Mayo Clinic gentian-violet has been administered by mouth in both the liquid and tablet form.

Irrigations of the colon have been found of limited value. The huge armamentarium of so-called intestinal antiseptics used in the treatment of this disease is well known and it is hardly necessary to list them here. In many cases improvement follows irrigation of the colon, but this is exceptional if simpler means are of no benefit. However, if only the rectum and sig-

moid are affected and ulceration apparently is extensive, local applications of witch-hazel, mercurochrome, sodium-chloride solution, gentian-violet and argyrol have definite value. Still this group does not represent more than a fifth of the cases of chronic ulcerative colitis observed in the Mayo Clinic.

To combat anemia, transfusions are often necessary when the patient does not respond well to direct treatment. Blaud's pill in liquid form and cod-liver oil may be used in certain cases. Mercurochrome administered intravenously, as advocated by Young and Bassler, has been found of limited value in a few advanced cases of extensive ulceration of the entire colon.

Operative measures rarely become necessary; however, there are a few patients whose reserve is so depleted that they will not respond to medical treatment. Operative procedures may then be carried out above the affected area in order to divert the ileal secretions and leave the colon at rest. Obviously such procedures must be carried out above the colon, because surgical measures become necessary only when the entire colon is affected. Cecostomy and ileosigmoidostomy are irrational procedures as they entail cutting through a friable, highly infected colon. Ileostomy is the preferable procedure when medical treatment fails. Colostomy becomes necessary only in cases of extensive perirectal infection or severe rectal stricture.

From January, 1924, to January, 1927, 385 cases of chronic ulcerative colitis were observed at the Mayo Clinic. In 266 of these the material obtained through the proctoscope was cultured according to the methods of Rosenow; a pneumococcus-like diplococcus of characteristic morphologic and biologic properties was isolated in 189 (71 per cent) of these. Such an organism was always found in the acute or sub-acute cases.

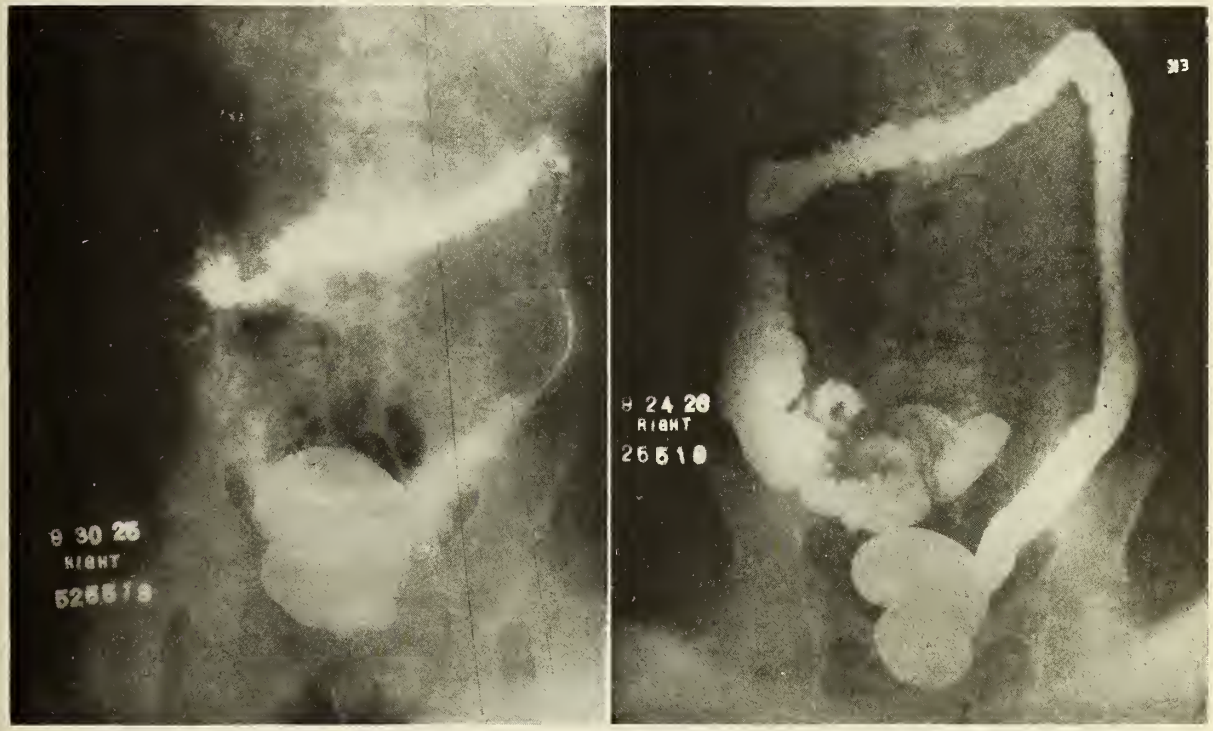

Fig. 2. Roentgenogram of colon after barium enema of a patient, aged twenty-one, during acute stage of chronic ulcerative colitis and after some treatment.

REVIEW OF CASES

The present review is not based on the entire series of cases up to January, 1927. In order to exclude too recent cases from the summary, the series was closed November 1, 1926. There are thirty-two recent cases still under observation. From the remaining 353 certain others had to be excluded for various reasons: in seventy-two treatment did not include the use of vaccine (most of these from the year 1924); in ten surgical treatment had been instituted elsewhere before the patient was admitted to the Clinic, and nine others were recurrent cases in which operative treatment had been carried out in the

Mayo Clinic before 1924; in five cases the patient arrived in extremis and died without any particular treatment. Superimposed malignant disease was present on admission in four cases, and in forty-six the complications at the time of admission (such as stricture or perirectal infection) or the apparent urgency of surgical interference in some of the severe cases precluded the carrying out of the more leisurely medical measures.

As confidence in the efficacy of vaccine increased, medical treatment was substituted for surgical treatment in an increasing number of severe cases. This is shown by the decline in the percentage of cases in which operation was performed during the three years: in 1924, twenty, in 1925, fifteen, and in 1926, eleven. At the same time the number of cases of chronic ulcerative colitis increased: 112 in 1924, 115 in 1925, and 158 in 1926. In seven cases the attempt to secure information concerning the subsequent course has failed. In the remaining 200 cases, which form the basis of this report, the treatment was medical and consisted essentially of the administration of vaccine.

Age, sex, and distribution.—In these 200 cases the disease appeared in the first decade in nine, in the second in twenty, in the third in seventy-one, in the fourth in thirty, in the fifth in forty, in the sixth in fifteen, in the seventh in five, and in the eighth in one. One hundred fourteen of the patients were males and eighty-six were females. They came from every part of the United States, and from Canada and Mexico.

Predisposing factors.—There were various factors predisposing the patient to chronic ulcerative colitis. Fifty-five patients volunteered the information that the first spell occurred in association with infection of the upper respiratory tract, including influenza, pneumonia, tonsillitis, nasopharyngitis and rhinitis. Only five had reason to believe that impure water or food had initiated the disease. In four cases the disease appeared after pregnancy or abortion, in two after an acute abdominal lesion and in four after bacillary dysentery. None of the others had the slightest idea of what may have provoked the onset.

Fig. 3. Roentgenogram of colon after barium enema of a patient, aged thirty-two, with an eighteen-month history of chronic ulcerative colitis, before and after treatment.

Symptoms.—The duration of symptoms with severe attacks of discharge of blood and pus from the rectum varied greatly. If the disease affected only the rectum and sigmoid there were from six to ten evacuations of blood and pus in twenty-four hours. If the whole colon was

involved, the patient commonly complained of from twenty-five to thirty, and sometimes fifty, evacuations in twenty-four hours. In twenty-six cases symptoms had lasted for about six months, in twenty-nine for about a year, in thirty-seven for two years, in twenty-two for three years, in twenty-one for four years, in fourteen for five years, in eleven for six years, in seven for seven years, in nine for eight years, and in twenty-four for ten or more years. Exacerbations with increasing severity of symptoms were the rule.

In many cases striking loss in weight had occurred, the greatest in any case being 66 pounds in one year. The average loss of weight was 23 pounds. It was common for patients to lose from 40 to 50 pounds, and thirty-four had lost 30 pounds or more.

Fig. 4. Roentgenogram of colon after barium enema of a patient, aged twenty, with a ten-year history of chronic ulcerative colitis, before and after treatment.

In practically all cases there was secondary anemia; in some cases the hemoglobin was as low as 23 per cent (Dare). In eighty-three cases it was between 24 and 60 per cent. In eighty-seven cases leukocytosis was present; the leukocytes varied between 10,000 and 20,000, usually between 12,000 and 14,000.

Roentgenographic appearance. — Roentgenograms showed that in ninety-three cases (46.5 per cent) the entire colon was affected by the disease, in twenty-two (11 per cent) the colon from the rectum to the hepatic flexure was affected, in twenty-four (12 per cent) it was affected as far as the splenic flexure, and in twenty-two (11 per cent) to the middle of the descending colon. In thirty-nine (19.5 per cent) the roentgenogram of structures above the brim of the pelvis was negative, only the rectum and rectosigmoid portions of the colon being affected. It is significant that in ten cases in which the roentgenogram was negative on the first examination, there was roentgenologic evidence of involvement of the colon (of the entire colon in six cases) on subsequent visits. This substantiates the opinion expressed by Logan that chronic ulcerative colitis begins in the rectum and spreads upward.

Complications.—The common complications in this series of cases were: polyposis in twenty-six (in the later stages of the infection), arthritis in ten, rectal stricture in eight, perirectal abscess in five, endocarditis in two, malignant neoplasm in two, and peripheral neuritis in one.

In 133 cases foci of infection were in the teeth, in 154 in the tonsils, and in three in the gallbladder.

Parasites were present in the stools in only twenty-two of the cases (11 per cent). *Endamoeba histolytica* was found in ten cases, *Endamoeba coli* in one, *Endolimax nana* in one, *Chilomastix mesnili* in ten, *Trichomonas hominis* in five, and *Giardia lamblia* in four. Stools were examined repeatedly in all cases. The incidence of infestation with the foregoing intestinal parasites is not as high in this group of cases of chronic ulcerative colitis as it is in the total number of cases in which stools are examined as a routine at the Clinic. The reason for this may be that patients could not always be properly prepared and the volume of discharge was often small.

In not a single instance were acid-fast bacilli found, either in direct smears from the rectal ulcers or in the stools. This fact is significant inasmuch as in many cases tuberculosis of the colon had been diagnosed previously.

As part of the treatment, tonsillectomy was performed in 109 cases, infected teeth were extracted in 120, cholecystectomy was performed for empyema in one case, and appendectomy for purulent appendicitis in one.

RESULTS

In all of the 200 cases vaccine or filtrate was administered subcutaneously.

Of ninety-two cases in which vaccine or filtrate was administered and foci were eradicated clinical cure occurred in eighty-five, and at least 75 per cent cure (as measured by ability to perform usual activities) in seven. There was no medication in these cases.

Of 101 cases in which vaccine or filtrate was administered and one or many additional therapeutic agents were employed (including, in the main, tincture of iodine, gentian-violet, witch-hazel, mercurochrome, kaolin, bismuth and opium) clinical cure occurred in sixty-eight, and 75 per cent cure in thirty-three. This makes a total of 153 (76.5 per cent) in which symptoms have been abolished, with forty in which disability was slight, although some symptoms were still present, or proctoscopic examination revealed residual signs of the disease. In 114 of the 153 cases, remissions have lasted for more than a year, and in a goodly number for three years. In fifty-one of these cases the rectal mucosa has been found entirely clear on proctoscopic examination. In forty cases the roentgenogram has shown a return of haustrations (Figs. 1 to 4). After initial remission, symptoms have recurred in twenty-four; in seventeen of these clinical cure has again followed treatment.

In the seven cases not already accounted for, medical management met with disappointing results and in five ileostomy was performed. Two of the five patients died, one from most unusual diffuse carcinomatosis of the entire colon, with highly malignant cells replacing the mucosa, the other from multiple pulmonary abscesses. In the sixth case colostomy was performed for rectal stricture; death occurred later from carcinoma superimposed on the chronic ulcerative colitis. In the seventh case ileosigmoidostomy was performed elsewhere during an acute exacerbation after the patient's dismissal from the Clinic.

CONCLUSIONS

The treatment of chronic ulcerative colitis now in use which affords the best results is immunization against the causative organism, removal of foci of infection, plenty of nourishing food, mental hygiene, and such supportive measures as are indicated in individual instances.

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PEPTIC ULCER*

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MY excuse for bringing the hackneyed subject of peptic ulcer before this group for discussion is that this common condition is at present being inadequately treated; inadequately, because it is being treated and prescribed for by rule of thumb. Pain two hours after meals which goes away with a glass of milk or soda—sure, an ulcer—send the man to the hospital or to his home with instructions to take a glass of milk and a tablespoonful of soda alternately every hour of the day for a few weeks—and the case is despatched forthwith. Does not Moynihan diagnose such cases over the telephone, and did not Sippy cure them? Or, if the patient comes back too often, get some surgeon to do a gastro-enterostomy and have done with him. However, there are too many sufferers from chronic unhealed and recurrent ulcers, and too many short-circuited stomachs. If an army fights on its belly, the ordinary citizenry certainly lives on the same organ, and both the citizen and the organ should be treated with respect.

The consideration of peptic ulcer herewith presented is a composite of opinions, developed by a group of men coöperating in the management of such a condition in their individual patients. This statement contains the theme of the discussion; namely, the coöperative attack of a diseased condition in an individual. It is not the condition which is considered, but the individual having the disease; peptic ulcer should be considered from the standpoint of the particular person ill, and not just academically.

Our experience has shown us that all individuals do not react in the same way to ulcers, either as to symptomatology, physical findings, laboratory tests or roentgen evidence. Since peptic ulcer is such a common condition, the tendency is to diagnose or eliminate on the basis of type history and examination and to treat the case in a routine fashion. Our experience, on the contrary, in handling about one hundred gastric and duodenal ulcers a year has led us to scrutinize narrowly the diagnostic data and then, the presence of an ulcer being definitely established, to discuss with the patient, the surgeon, the internist and the roentgenologist the ways and means of treatment.

Peptic ulcers occur in the stomach, duodenum, and, rarely, in the lower end of the esophagus. They may occur in the jejunum, but only after a gastrojejunostomy, or when the pancreatic or bile ducts have been transplanted to a lower portion of the ileum. It is evident, then, that ulcer occurs only in an acid medium.

An ulcer usually begins with a simple erosion, which involves only the mucosa and the superficial layers of the submucosa. Further penetration constitutes a condition of actual ulcer. What causes the erosion in the first place is as yet undetermined, but that the perpetuation as an erosion, or the further development into an actual ulcer, is due to aggravation by acid is evident. The presence of the acid digests any attempt at granulation and healing, leaving either a clean base, or a crater filled with debris in which bacteria may grow, protected by such media from the bactericidal effect of the acid. Whether the condition of hyperacidity so commonly found in ulcer is a predisposing or a consequent factor has never been worked out. The fact that many cases of ulcer show no hyperacidity helps neither way. It is thought by some that acid alone, given a small abrasion due to rough food, or food too hot or too cold, can produce erosion and aggravate it to an ulcer, while others argue that a condition of endarteritis, bacterial emboli, etc., must also be present. Whether the remote focus in a tooth is specific for the ulcer, or merely provides a non-specific systemic infection which produces evil consequences at some site of traumatically lowered resistance is also a question as yet unanswered. Some external causes have also been considered operative in a certain restricted type of case, such as: burns (toxic), external violence (producing a point of ecchymosis or hemorrhage with subsequent necrosis, etc.) or long continued pressure trauma (such as corset

*From the Department of Medicine, The Nicollet Clinic, Minneapolis. Read before the Annual Meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

lacing, application of external heat, etc.) or chemicals (direct chemical burn).

There are a few points in diagnosis which should be emphasized in speaking of ulcer as an individual problem. In the first place, the history may deceive, in that any condition producing hyperacidity will give the so-called ulcer history, a chronically inflamed appendix or gallbladder, or simple spastic constipation. Secondly, point tenderness may be misleading as to location; our increased use of the *x*-ray has shown us that the abdominal organs may be far from their usual habitat. The gallbladder, for instance, may be anywhere on the right side of the abdomen, from the diaphragm to the iliac crest, the deviations of the appendix from the classical anatomical position are well known, and the duodenum may be a small section of bowel high up under the liver edge, where it cannot be palpated at all, or it may sag below the umbilicus in the midline.

It has been noted that ulcer may occur with normal acids (practically never, however, with achylia); therefore the finding of such would not cast suspicion on the diagnosis, if it were otherwise incontestable.

Finally, all ulcers cannot always be demonstrated roentgenologically. The presence of small erosions has to be almost guessed at by the finding of secondary signs. Many of these secondary signs, on the other hand, can be present as reflex phenomena produced by disease of the gallbladder or appendix. Some ulcers may be so situated as to remain hidden by the silhouette outline obtained by roentgen ray, and if they do not happen to be very active and show no secondary signs, may be missed entirely.

Regarding treatment, the policy should be conservative, both medically and surgically. All ulcer cases should not be sentenced to incarceration in a hospital under the Sippy regime and tortured with the stomach tube, nor inconsiderately and unphysiologically short-circuited by gastro-enterostomy. There is, in fact, no routine treatment. In the first place, the condition, stage and complications of the ulcer itself should be considered. Any ulcer that gives a history of many years' standing with semi-annual, annual or even biannual recurrences, is not going to lose all its induration, scarring, excavation, perforation and hemorrhagic features on a bland diet in a hospital with alkalization and lavage. The symptoms of the immediate attack can be relieved thereby, but such treatment is not going to prevent the consequences. Chronicity, then, is the first dividing line or deciding point, and with that is implied perforation and hemorrhagic tendencies, extra-duodenal or gastric inflammation and irritation, obstruction, multiplicity and possible malignancy in gastric ulcers. Furthermore, the chronic ulcer has probably been cured many times by the Sippy regime, if not even by Sippy himself, and its carrier may demand that something be done before the hospital, drug store and gastro-enterologist bankrupt him, or his employer hires another man who does not have to take a vacation of eight weeks twice a year. If a chronic ulcer has no signs of any complicating factors—that is, if it is not large, has not scarred sufficiently to cause obstruction, has not perforated or attempted to, and has not shown a tendency to bleed—the pateint can be placed upon an ambulatory regime. This consists of three meals a day of bland, well cooked food of sufficient caloric value, with milk between meals and alkalies after each feeding. The patient becomes symptom-free, and if in eight weeks the ulcerated area appears by *x*-ray to have made some attempt at healing, a more general diet is tried. If this is tolerated, he is allowed to continue. In the meantime, any foci are eradicated. If he remains symptom-free for a reasonable length of time, say two years, he may elect to tide himself over any slight attacks that may occur during an infection, or other disturbance. This is the favorable case, and the best result that we can expect. However, if, after trying his general diet, his symptoms return, he should be given the benefit of surgery.

On the other hand, the finding of any of the before-mentioned complications or factors in the original examination demands surgical consultation. The obstructed stomach is surgical. The stomach which has repeatedly tried to perforate or has actually done so is surgical. The stomach which shows a tendency to bleed is surgical. The ulcer complicated by an appendix or gallbladder, or both, is surgical. The gastric ulcer showing malignant signs is surgical. The acute ulcer is medical, and a Sippy case; that is, should be put to bed in a hospital and given hourly feeding and alkalization. We have not added the use of

the stomach tube. The actively hemorrhaging ulcer is also a case of bed or hospital, with starvation and then gradually augmented feedings, with supportive fluid and blood supply as indicated, *and morphine.* After the ulcer has ceased bleeding and the patient is in good condition, the case may then be handled in accordance with the above criteria, whether it be a chronic one, or merely a simple acute erosion.

Lastly, the economic status, employment, occupation, etc., of the patient has to be considered no matter what the medical indications may be, and these considerations are so various and individual that discussion of them in a general way is impossible.

As to the rationale of surgical treatment, it is, ideally, the removal of the ulcerated area, and the leaving of a physiologically perfect organ, anatomically and functionally. If we merely wanted to put the area itself at rest and give it an alkaline bath instead of allowing it to remain active in an acid medium, we could continue with bed rest, atropin and soda, alternating with starvation. We can even feed the patient per rectum, without running any operative risk. This ideal cannot often be attained, due to the position of the ulcer or the complications attendant upon a chronic ulcer which usually produce extragastric disease. However, the surgeon should try to choose that type of operation which will most nearly attain the result sought, and whether that be simple excision, partial resection, with or without gastro-enterostomy, or simple gastro-enterostomy, is dependent upon the conditions found at the time of operation. The surgeon's duty also comprises an estimation of the state of the gallbladder or appendix as a possible contributing factor, and the elimination of such, if indicated. Here it may be said that the patient is very carefully prepared before operation and very carefully managed afterward. The acute phase of the ulcer is quieted; the obstructed and decompensated stomach is nursed back to favorable tone; supportive fluids and blood are offered as indicated and the after-care is supervised by the internist with the proper dietary continued long enough to give results. Finally, the end-result is checked by the roentgenologist with an eye not only to the elimination of the lesion, but also to the physiological mechanism established by the operative interference.

The rationale of medical treatment is based upon the conception that both muscular activity and acidity aggravate the ulcer and delay its healing. Both of these factors are increased when the stomach is either called upon to be too active or is allowed to remain too long inactive; that is, if it is either too full or too empty. Therefore, the object is to keep it moderately filled and satisfied and also neutralized. This can be done by repeated small feedings of bland, non-irritating foods and alkalization, adding sedatives as needed. In our so-called Sippy regime, we begin with milk and cream and add other soft foods, gradually lengthening the time intervals and increasing the amounts over a period of three weeks. We do not pump the stomach except in special cases, nor do we give the enormous doses of alkalies that Sippy himself advocated. Our results have been satisfactory. The so-called ambulatory regime is essentially three meals a day of well cooked foods in moderate quantities, avoiding roughage, and two intermediate feedings of milk or egg and milk, and alkalization.

Needless to say, in every case, whether medically or surgically managed, foci are removed at such times and to such an extent as seems best in the individual case.

In conclusion, this problem does not present any question of medicine versus surgery; no more than do any other conditions in medicine. That is a catch phrase which should be deleted from medical vocabularies and particularly medical clinical thought. All cases cannot be handled routinely by any one method or procedure. It is a question of proper evaluation of the factors in each case, and a coöperative effort by both internist and surgeon to cope with the situation.

1009 Nicollet Avenue

RECTAL FISTULA IN THE TUBERCULOUS*

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IN presenting this paper on rectal fistula as seen in tuberculous patients an effort has been made to make an accurate study of the condition by correlating the clinical symptoms with those of the laboratory findings. In reviewing the literature we can find but few instances where this has been done which no doubt is the cause of the wide variation in opinion as to the frequency or infrequency of tuberculous fistulæ.

In each case studied we made and recorded a clinical diagnosis before the laboratory work was done. By this method we have endeavored to determine with what accuracy the diagnosis of tuberculous fistula could be made from the clinical findings. The final criterion upon which the diagnosis of a tuberculous fistula was based was the findings of definite tubercle formation in the tissue removed at the time of operation. If tubercles could not be demonstrated the fistula was considered non-tuberculous. In those cases which were seen in the abscess stage the pus was aspirated, smears made and guinea pigs inoculated by the antiformin method. This was not done in the case of fistulæ because of the possibilities of tubercle bacilli getting into the fistula from the intestinal tract.

The clinical picture of the formation of a typical tuberculous fistula is as follows. The patient notices a hard swelling near the anus. It is painless or nearly so and there is but little tenderness on pressure. The skin appears normal and is not attached to the mass. The indurated area gradually increases in size and when the patient stands there may be a bearing down sensation in the rectum. Slight discomfort on sitting or walking is noticed. After several days the skin appears reddened in a small area. In ten days or two weeks the abscess ruptures discharging a small amount of thin watery pus which may be flocculent.

From such a typical history there is often considerable variation. Secondary infection may be present even in the abscess stage. If this be true the course of abscess formation is more rapid, pain is more pronounced the amount of pus is larger and is of the usual pyogenic character. In some cases the abscess has its origin high in the ischio-rectal fossa or above the levators and it may be several weeks before symptoms referable to the rectum are noted. In these cases the first symptom is a rise in temperature. In patients who have been afebrile this is quite striking but the cause is usually overlooked until local symptoms appear. Any tuberculous patient who suddenly begins to have an unexplained temperature should have a rectal examination at once. If the patient is seen before the abscess has ruptured it should be opened without delay but it should be done with the actual cautery rather than the scalpel.

The fistulæ which follow the abscess stage have certain definite characteristics in typical cases. There are three distinct unmistakable types of tuberculous fistulæ. The first type has a small external opening which will just admit the tip of a probe. Once the probe is passed through the opening a cavity is found in which the instrument may be freely moved about, sometimes for a distance of several inches. These cavities are shallow and lie just beneath the skin, which, except at the opening of the fistula, appears perfectly normal.

The second type has one or more large external openings which are often irregular in outline. The skin edges about the opening are thin and of a livid bluish red color. From these openings the skin is undermined for some distance. Both types are lined with a heavy layer of flabby granulation tissue, which contains many tubercles. In some cases conglomerate tubercles appear as numerous pin-point yellowish dots scattered through the granulations and are easily

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

seen macroscopically. Underneath the granulation tissue is a layer of dense scar tissue which is nature's method of checking the process. The more distal parts of these fistulæ are insensitive but as the probe reaches the sphincteric area pain is noticed. The diameter of the tracts is larger than in simple fistula and the sinuses tend to undermine the bowel well or extend laterally.

The third variety is sometimes termed the rodent type. In these a large cavity with an irregular eaten-out appearance is seen. The infection seems to carry all before it and the virulent types are seen in patients whose physical condition is not good and who are not successfully combating their extra-rectal tuberculosis.

The treatment of these cases is operative and in this series three methods of operative procedure were employed, namely, sharp dissection, sharp dissection and cautery and cautery alone. With few exceptions sacral anesthesia was employed but general anesthesia may be used in selected cases. From our experience we do not believe that sharp dissection alone is advisable and it has not been used except in the earlier

Fig. 1. Tuberculous fistula, Type I.

Fig. 2. Tuberculous fistula, Type I, showing cavity after overlying skin has been removed (Same case as Fig. 1).

muscular as well as the fatty tissues are destroyed. The bases of such cavities are not lined with dense scar as described in the other types. In other words, nature is unable to even partially combat the infection. These are the usual types but quite frequently we find a fistula which is to all general appearances a simple fistula yet sections of tissue reveal it as tuberculous. This is probably the case when the tubercle bacilli are of low virulence and the patients resistance good. At least it may be said that the more cases. This method causes more bleeding, opens up the lymphatics and spreads the infection by direct contact. The operative wounds do not heal as readily as those where the cautery is used. This is doubtless because with the cautery we eradicate the tuberculosis while with the knife we spread it. Except for the fact that it is impossible to do finely detailed operative work with the cautery it would be the ideal method of operation. In working in the rectum and about the sphincter and in searching out lateral

branches we found it too clumsy for accurate work. For this reason we now as a routine combine the cautery and sharp dissection. The cautery alone is used in the more distal part of the fistula and in the sphincteric area scissors and scalpel are used. The areas thus opened up are at once cauterized with the dull red iorn. By this method we feel that we have the advantage of eradicating the tuberculosis with the cautery and at the same time secure cosmetic and functional results which cannot be secured by cautery operation alone.

Fig. 3. Tuberculous fistula, Type II.

Fig. 4. Tuberculous fistula, Type III.

With this procedure we have secured healing in all cases except those which have been done too recently to tabulate and those who died of their extra-rectal tuberculosis. The time of healing was from four weeks to six months. The average time for one stage operation was eight weeks. In some extensive cases we have deliberately planned the operative work to be done in more than one stage. In five cases we were compelled to cauterize for a second time areas which refused to heal. Twenty-seven cases were cured by one operation, seven were operated twice; two were operated three times and four many times. Those requiring numerous operations were very extensive cases involving both buttocks and the scrotum as well as the area immediately adjacent to the anus.

It might be well to mention that the after-care of these patients is somewhat different from that of non-tuberculous individuals. The ordinary patient is usually out of bed in three or four days but all cases with an active tuberculous process even though they are not bed patients at the time of operation are kept in bed at least four weeks. We feel certain that a flare up of the extra-rectal tuberculosis is less likely to occur if this rule is enforced.

As has been stated the facts upon which a diagnosis of tuberculosis may be definitely made is the finding of the bacillus in smears from an aspirated abscess, the innoculation of a guinea pig with positive results or tubercle formation in the tissue removed. It might be well to note that one negative section proves nothing. In a number of cases areas from several portions of the tissue were examined before tubercules were

found. The most fruitful tissue is the heavy granulations found lining the sinuses.

Of all cases admitted to Glen Lake Sanatorium, approximately 3 per cent had rectal fistulæ. The material upon which our findings are based are forty cases operated at the Sanatorium and in private practice. Seven of these were seen in the unruptured abscess stage. In only one case were tubercle bacilli found upon examination of smears but in six, positive guinea pig innoculations were secured. With one exception all cases

Fig. 5. Microphotograph of tissue removed from a fistula showing typical tubercle formation.

had definite tuberculous lesions elsewhere in the body. In all but three patients the lesions were in an active stage. Thirty-six had pulmonary lesions. Three had bone lesions alone, and one bone and pulmonary. There were ten cases of gastro-intestinal tuberculosis and two cases of tuberculous peritonitis, all of which also had pulmonary lesions. One case had no demonstrable lesion. The general effect of the operative procedure was interesting. The pulmonary lesions in the four cases having a healed condition were not affected. Of the thirty-six cases having active tuberculous lesions, twenty showed decided improvement in their general condition. Five developed temporary flare-ups and five showed no change. Six patients died but as far as we were able to ascertain by clinical and post-mortem examination the operative procedure had no bearing upon these deaths.

In this group of forty cases the clinical diagnosis and laboratory findings agreed in thirty-three cases or 82 per cent. Of these thirty-three cases twenty-nine were diagnosed clinically as tuberculous and four as non-tuberculous. In seven cases or 18 per cent the clinical and laboratory findings did not agree. Three cases clinically positive were microscopically negative and four clinically negative were found positive on section. The percentage of cases proved to be tuberculous by laboratory methods was 82 per cent.

CONCLUSIONS

1. About 3 per cent of all tuberculous patients have rectal fistulæ. From this it would seem that there is a definite tendency toward the formation of rectal fistula in tuberculous individuals.

2. About 78 per cent of tuberculous fistulæ can be diagnosed clinically. A number which appear as simple are really tuberculous.

3. Diagnosis can only be confirmed when the bacillus is demonstrated from pus aspirated from the unruptured abscess, either by smear or guinea pig innoculation, or by the finding of actual tubercle formation in the diseased tissue.

4. Of all rectal fistulæ occurring in this group of tuberculous individuals 82 per cent were tuberculous. We believe the percentage is actually higher because of the possibility of tuberculosis being present but not found in the section of tissue examined. In five of our cases tuberculosis was not found in the first section of tissue examined and it was only by repeated sections from different area that it could be demonstrated. There were likely other cases where it was present but not found.

5. Despite the one unproven case in this series it is doubtful if tuberculosis is ever primary in rectal fistula. It is possible but very improbable.

6. The best type of operation is either by cautery alone or sharp dissection and cautery as the particular case seems to indicate.

7. Tuberculous fistulæ can be operated successfully. Frequently the general condition of

the patient is also benefited by this operation and its advisability should be seriously considered in all cases.

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ETHICS OF MEDICAL NEWSPAPER WRITING

Dr. Charles A. L. Reed was president of the American Medical Association at the time of its reorganization. He, later, was on the committee that formulated its "Principles of Ethics." He is now devoting himself exclusively to literary work, his last book, "The First Estate," just from the Stratford press, being a novel with a scientific motif. But, in addition to writing books, he writes an article on health and success every day for the King Features Syndicate, New York, which, in turn, furnishes the series for simultaneous publication in many newspapers of the United States, Canada, and foreign countries. Dr. Reed's views on the ethics involved in his newspaper work are, therefore, of interest. In a recent interview he said:

"No, I have not 'retired.' I am now practicing 'educational medicine.' I am 'carrying the message to the masses,' as it were. It is true my articles are having a phenomenal run. This, in large part, is due to the influence of the medical profession. You see, I had long wanted to do just what I am now doing. The opportunity came to me unexpectedly. I saw, however, that newspaper writing could not be ethically combined with a fee-earning practice. Each was entirely ethical within itself but the two wouldn't mix. The combination spelled 'advertising' with the worst form of unfair competition. My practice at the time was distinctly national. But, without hesitation, I announced to the entire medical profession that I would accept no more patients—and I haven't. Now, in spite of the fact that I have never published my home address in my articles —another fine ethical point—I do receive through my many newspaper offices literally hundreds of letters asking for treatment. In no single instance have I ever given it. The experience, however, shows what I mean by 'unfair competition.' On the other hand I have used my articles, now numbering well on to two thousand, to create a higher appreciation of the medical profession by the general public—a better understanding between the two. This is a thing that I have been and am doing much more effectively, so far as publicity methods are concerned, than the profession in any locality can do in its own behalf. It is doubtless in recognition of this fact that, as I know to have been true in many instances, my professional colleagues have asked editors to put on my feature and have thus helped to extend my circulation and influence."

ALPHA-LOBELINE

The Council on Pharmacy and Chemistry reports that under the name "Alpha-Lobelin," Ernst Bischoff Co., Inc., markets a solution of the hydrochloride of the alkaloid alpha-lobeline. The product is marketed in ampules stated to contain, respectively, 1/6 grain and 1/20 grain of alpha-lobeline hydrochloride. The product was submitted to the Council with the claim that its use was indicated in "asphyxiations, shocks, and poisoning where there is central respiratory depression." The Council's report states that alpha-lobeline has been very extensively advertised with claims that are extravagant, often bordering on the sensational. The evidence as to the value and safety of the product is still so incomplete that the Council has been unable to reach a definite conclusion. The Council calls attention to a circular issued by the American distributors containing a "Partial List of Hospitals using Alpha Lobelin" and to a paper by Norris and Weiss. To learn something as to the experience of some of these hospitals with the drug, letters were written to twenty-seven of the more prominent of them. While the reports of some of these hospitals are favorable to the use of the drug (although it cannot be said that they are at all conclusive), it is evident that the circular containing this list of hospitals "where the drug is being used" gives an erroneous impression as to the extent of its use and of the results to be expected. The paper by Norris and Weiss and other papers which have been published contain no conclusive evidence regarding the usefulness of alpha-lobeline. Since adequate evidence for the therapeutic usefulness of alpha-lobeline is lacking at the present time, the Council has postponed definite action in regard to the eligibility of the drug for inclusion in New and Non-official Remedies. (Jour. A. M. A., August 27, 1927, p. 693.)

IT WAS WORTH TRYING

"Here," said the young doctor to his elder partner, "is a new disease I'd like mighty well to see a sample of and attempt the treatment."

"Well," said the old doctor thoughtfully, "I guess we can manage it. Send to Mrs. Newrotique a pamphlet describing the symptoms, and inside of a week she'll have it sure."

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EDITORIAL

The American Hospital Association

The annual meeting of the American Hospital Association held at Minneapolis in October was the outstanding medical event of the year in Minnesota.

The Association was formed in 1899 for the purpose of promoting all branches of hospital efficiency in the United States and Canada. From a small membership limited to hospital superintendents the membership has grown tremendously through the addition of assistant superintendents, hospital trustees, physicians, nurses, dietitians, social workers and occupational therapists. In connection with the convention, meetings of the American Occupational Therapy Association, the American Association of Hospital Social Workers, the Hospital Dietetic Conference and the Children's Hospital Association were also held.

The magnificent new Minneapolis municipal auditorium was ideally suited for the various meetings and the huge commercial exhibit of everything a hospital could possibly need.

The address by Dr. Morris Fishbein, editor of the A. M. A. Journal, at the banquet which was attended by some 900 members and guests, contained much food for thought and the ideas expressed in his characteristic style we heartily endorse. It is unfortunate that the press rather distorted his speech. Dr. Fishbein did not give the impression that the training of internes in the hospital is detrimental to the welfare of the patients nor that the standardization of hospital requirements is not in general beneficial to the hospitals. Every physician knows that most hospitals are better hospitals because of internes and that few could get along without them. Standardization of hospitals by the A. M. A. in the interest primarily of interne instruction and by the College of Surgeons in the interest of better hospital service both have done much to raise the quality of medical treatment in hospitals. As we see it, Dr. Fishbein's criticism was that hospitals by stretching their bed capacity and adding expensive equipment in order to attain certain requirements may so increase the cost of hospitalization as to fail to best serve their particular communities.

As Dr. Fishbein pointed out, the modern hospital is rendering many times the service of former years. The increased service has been accompanied by increased cost—150 per cent in the past fifteen years according to Dr. Fishbein. This is more than double the increase in cost of living and hence hospitalization has become an increased burden. The answer to this criticism made by Dr. MacEachern, Director of Hospital Activities of the American College of Surgeons, that the cost of hospitalization has increased only 135 per cent during the period mentioned and that the cost to patients has increased only 65 per cent, does not in our opinion lessen the problem materially. Someone has to pay the entire increase in cost of hospital service and if the patient doesn't the answer is hospital deficits or more endowments.

The solution of the problem is not clear. Endowments help. Economy in hospital adminis-

tration has been greatly furthered by the work of the Committee on Simplification and Standardization of the Hospital Association. Thousands of dollars have already been saved through mass production by the standardization of hospital supplies such as beds, china and textiles. If the investigation of the Association Committee on Hospital Fire Insurance materializes hospitals will also save through the reduction of fire insurance rates. The committee has shown that the mere fact that hospitals are open and patrolled by night as well as by day reduces the fire hazard. The report further shows that whereas the ratio of fire losses to premiums in general is about 2 to 1, in the case of hospitals it is nearer 19 to 1.

There is one way in which the medical staff of a hospital can assist in this matter of hospital economy. The expense of any laboratory test must be paid by someone. The unintelligent requisition for laboratory tests only increases the cost to the patients, who as a rule pay the bill directly or indirectly.

One of the keynotes of the convention seemed to be "the patient first." The better care of the patient at less cost is a worthy purpose and fully justifies the existence of the Association.

Northern Minnesota Medical Association

The recent meeting of the Northern Minnesota Medical Association at St. Cloud, Minn., brings to mind certain features that merit editorial comment.

Our state has now, in addition to its various county and group local societies, a very vigorous southern and northern Minnesota division. The suggestion of Dr. W. F. Braasch (given at the meeting banquet) seems proper and cogent: both these sectional meetings should have sort of loose contact with the State Association—sufficient so that all may pull together for certain established principles; not enough so that cumbersome officialdom need obstruct their main purpose of giving yearly, snappy, regional conclaves, with the best of papers and available clinics.

In this latter regard, all in attendance (something over one hundred and ten) seemed agreed that the present meeting was a notable success.

The program builders (as usual) tried hard to get men from the so-called "country" to appear. Only a few responded; but sufficient to show what could be done if these men did not evidence too much inherent modesty, and, what is more, a lack of habit in presenting medical society material. It is only too well known to larger city dwellers that the supposed beatific mantle of superiority, opportunity and leisure covers them about as effectually as does the average bathing costume of the choice of the beauty contests. In other words, there are more very general practiitioners in our large cities than anywhere else. Neither are they called on, as are their country colleagues, to meet every and sundry issue or emergency, for they can most easily shift the load of responsibility, even if the patient doesn't do it for them. Therefore, those situated in our rural districts, who really cultivate their professional wares and offer them through the medium of a satisfactory individual personality, will usually find themselves as fortunate in a "Main Street" of, say, two thousand, as one of two hundred thousand.

One hesitates to mention something else touching on the personal courtesy of those in attendance. As is always the case in our meetings, the local committees, and the profession in St. Cloud, provided all necessary conveniences and a fine assortment of clinical material. Now, none of the numerous "specialists" who appeared on the program would have cared to address a collection of empty chairs. Each one desired as full a complement of those in attendance as possible. Nevertheless, many of them who came (and presented material of the highest order) edged into the meeting place only long enough to be present for their part of the program or to listen while a colleague in the same specialty spoke. We all know this is not right, and flagrantly announces a selfish centering that augurs no good either for the men who do it or for the profession as a whole. Much of specialism falls flat without coordination, and men of long experience know all too well how much the isolated specialist needs the broadest of professional contact all around. Neither is it good policy for them to intimate that their lives are so busy that they cannot abstract a few hours—even to sweat with the rest of us under the blazing heat of a Stearns County sun, which, while it upset our bodily water balance, was doing much to add to the bank balance of our corn raising brethren on the farm.

Therefore, let us resolve to go to medical meetings, and stay as long as we can.

—E. L. T.

Registration of Laboratory Technicians

In an editorial entitled "The Education of Laboratory Technicians" which appeared in the Minnesota Medicine in June, 1923, these prophetic words were spoken: "We may look forward hopefully to the time when the coördinated efforts of the members of the various technical branches and those of the medical profession which they serve will lead to more uniform standards of education and more clearly distinguishing criteria of individual fitness." (H. E. R.)

That "time of coördinated efforts" appears to us to be very near at hand. At the annual meeting of the American Society of Clinical Pathologists which was held in Washington last May, a proposal to create a Board of Registry of laboratory technicians under its direct control was adopted. The Board was authorized to proceed at once to register the laboratory technicians throughout the United States with a view of classifying them according to their education, training and experience and defining the minimum standards of qualifications for the future technicians, in the light of the information thus obtained. The Board hopes to issue, according to the plans now under contemplation, a Certificate of Registration to those laboratory workers who qualify under its minimum standards and classify them accordingly into one of two or three classes to be proposed. The Board is also expected to outline a program for training the future technicians which shall be a basis for a curriculum in medical technology in various medical colleges and universities and to encourage the establishment of such a course wherever the needs appear warranted. Such a course may not only be one equivalent to a full college course leading to a bachelor's degree, as now in operation at the University of Minnesota, but may also be a two year college work leading to a certificate in which all the technical essentials of laboratory diagnosis are emphasized with the minimum in didactic basic sciences.

The Society's program in thus attempting ultimately to standardize the education and qualifications of the future laboratory workers has found the most whole hearted support from the leaders, not only among the pathologists and laboratory directors, but also among those interested in medical education and hospital management.

Indications are that in the next few years, we shall see not only decided elevation in the qualifications of the individual members of the laboratory personnel but also the establishment on the one hand by not a few leading universities and medical colleges of a course in medical technology and the effective control, on the other hand, of the medical laboratories and institutions which are now flourishing by freely commercializing the possibilities of such a course among the unqualified and ignorant. All of which point to a better clinical and diagnostic laboratory service to the medical profession in the future.

Kano Ikeda, M.D.

Editorial Change

We take pleasure in announcing the appointment of Dr. Margaret Warwick as Assistant Editor of the journal. Dr. Warwick, although specializing in pathology, has been keenly interested in medical publications in general and will have supervision of the book reviews appearing in the journal.

The present policy of the journal in respect to book reviews will be continued, the reviews not being limited to scientific works exclusively. A number of books written for lay consumption which have appeared during the past year have had to do with physicians and medical practice in its various phases. The doctor's reaction to such publications is always interesting. Members are requested to submit book reviews for publication direct to Dr. Warwick, Hamm Building, Saint Paul.

We take advantage of this opportunity to express an appreciation of the valuable assistance and coöperation of Dr. Donald Bacon, who has been assisting in the editorial work of Minnesota Medicine for several years.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

AMERICAN COLLEGE OF SURGEONS

DIVISIONAL MEETINGS

The divisional meeting of the members of the American College of Surgeons for the states of Minnesota, North Dakota and Manitoba, is to be held in Duluth on November 17 and 18, 1927.

At this time it is planned to have papers, clinics, a lay meeting in the evening, featuring hospitals, and the American College of Chicago is going to bring in speakers for this lay meeting.

All members of the American College of Surgeons from these states, all hospital superintendents, and any other doctors who may be interested, are invited to attend.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association was held at Austin, Minnesota, September 30 and October 1, with the presentation of a very interesting scientific program. The 1928 annual meeting will be held in the fall in Rochester, Minnesota. It is planned to have a more extensive program next year as no scientific program is to be presented at the State Medical Association meeting in Minneapolis in the spring.

The following officers were elected:

President, Dr. J. S. Holbrook, Mankato.

First Vice President, Dr. Waltman Walters, Rochester.

Second Vice President, Dr. Horace Newhart, Minneapolis.

Secretary-Treasurer, Dr. M. C. Piper, Rochester.

Executive Committee, Dr. H. W. Meyerding, Rochester; Dr. F. R. Huxley, Faribault; Dr. H. T. McGuigan, Red Wing.

Inclement weather accounted for the low registration of only seventy.

TRAVEL STUDY CLUB OF AMERICAN PHYSICIANS

The Travel Study Club of American Physicians announces a Study Tour for 1928 to Spain, the Riviera, Northern Italy, Budapest, Vienna, Munich and Bavarian Health Resorts, Berlin and Hamburg, visiting clinics and medical institutions.

The Tour starts June 30, 1928, and will take two months. Dr. Fred H. Albee of New York is President, and Dr. Richard Kovacs, 223 East 68th Street, New York, to whom inquiries for further details may be addressed, is Secretary.

CLINICAL ORTHOPEDIC SOCIETY

The next meeting of the Clinical Orthopedic Society will be held in Memphis, Tennessee, Jan. 9 and 10, 1928. Dr. H. W. Meyerding, Rochester, Minnesota, is president.

STEARNS-BENTON COUNTY MEDICAL SOCIETY AND UPPER MISSISSIPPI MEDICAL SOCIETY

At the joint meeting of the Upper Mississippi Medical Society and the Stearns-Benton County Medical Society held at Long Prairie, Thursday, Sept. 29, 1927, the following program:

1. Traumatic Rupture of the Mesentery, Dr. E. W. Smith, Bemidji
   Discussion—Dr. Holtz, Little Falls
2. Hypertrophy of the Prostate, Dr. J. A. Thabes, Brainerd
   Discussion—Dr. F. W. Van Valkenberg
3. Eczema in Infants, Dr. W. B. Richards, St. Cloud
   Discussion—Dr. O. A. Groebner, Cold Springs, Dr. F. J. Schatz, St. Cloud
4. Review of Skin Diseases, Dr. H. B. Clark, St. Cloud
   Discussion—Dr. B. A. Smith, Crosby
5. Treatment of the Commoner Skin Diseases, Dr. R. L. Christie, Long Prairie

OF GENERAL INTEREST

Dr. A. R. Blakey has moved his practice from Stillwater to Osakis, Minnesota.

Dr. C. W. Paulson, of North Branch, Minnesota, has moved to Rochester, Minnesota.

A son, Verne Carlton, Junior, was born to Dr. and Mrs. V. C. Hunt of Rochester on Monday, August 29.

Dr. O. S. Werner has disposed of his practice at St. Hilaire, Minnesota, and is now located in Saint Paul.

Dr. E. F. Henderson, who has been in Sandy Lake, Pennsylvania, since last May, has returned to Rochester, Minnesota.

Dr. H. S. Lippman, formerly of Minneapolis, is now associated with the Institute of Child Guidance, 145 East 57th Street, New York City.

Dr. Neil John Maclean of Winnipeg addressed the Minneapolis Surgical Society at its regular meeting, Thursday, September 29, on the subject "Intrathoracic Goiter."

Dr. G. Kertesz has located in Arlington, Minnesota, for the practice of his profession. Dr. Kertesz practiced for a short time in Pine River before moving to Arlington.

Dr. Woodard Colby, formerly of the Miller Clinic, has opened offices at 814 Lowry Building, Saint Paul, and will limit his practice to treatment of diseases of infants and children.

The marriage of Dr. E. J. Pengelly of Crosby, Minnesota, and Mrs. Madeline Hughes of Proctor was celebrated early in October, in Minneapolis. Dr. and Mrs. Pengelly will make their home in Crosby.

Miss Alice Rye was married to Dr. J. H. Bliss on Saturday, September 3, at Starbuck, Minnesota. Dr. and Mrs. Bliss spent a month in the East before returning to Rochester, where they will make their home.

Dr. R. A. Stephenson, who has been a fellow in pediatrics in the Mayo Clinic since October, 1925, left Rochester for Flint, Michigan, where he will practice pediatrics. His address will be 2603 Mason Street.

Dr. E. S. Mariette of Glen Lake Sanatorium was recently elected chairman of the sanatorium section of the Mississippi Valley Conference. The new president of the conference is Mr. Murray Auerbach, executive secretary of the Indiana Tuberculosis Association. The 1928 conference will take place in Des Moines, Iowa.

Dr. Edward T. Evans, who since 1922 has been associated with the orthopedic department of the Boston City Hospital and the Hospital for the Ruptured and Crippled of New York City, has obtained offices at 306 Physicians and Surgeons Building, Minneapolis, and will limit his practice to orthopedics. During the past year Dr. Evans visited various orthopedic clinics in Europe.

The cornerstone of the new Children's Hospital at 311 Pleasant Avenue, Saint Paul, was laid at 3 P. M., October 13, with appropriate ceremony. Addresses were made by Dr. Isaac A. Abt of Chicago, Dr. James C. Neff of Indianapolis, John E. Anderson, Ph.D. of Minneapolis and Mr. George F. Lindsay of Saint Paul, chairman of the Board of Trustees of the hospital. The building of the hospital has been made possible by donations from a number of citizens and the untiring efforts of Dr. Walter R. Ramsey.

The Mayo Foundation for Medical Education and Research offers clinical, surgical and laboratory demonstrations in urology December 12 to 17 inclusive. Registration will be limited to a small group of men already engaged in urology. No fee will be charged.

The program will include lectures, clinical discussion of obscure cases, urographic interpretation, demonstrations of punch operations and ureteral manipulation, litholapaxy, laboratory procedures, preoperative and postoperative treatment and surgical clinics. Communications should be sent to the Director of the Mayo Foundation, Rochester, Minnesota.

PRIZE THESIS CONTEST

A cash prize of $250.00 is offered by the Minnesota Society of Internal Medicine to any regular practicing physician in the State of Minnesota for the best thesis on some subject related to clinical internal medicine, or to research in the medical sciences related to internal medicine.

The purpose of this prize is to stimulate the research spirit in practitioners of medicine, and therefore is to be awarded only to physicians in active practice of clinical medicine (not limited to internists).

Physicians in the employ of the United States Army, Navy, or Public Health Services, whose legal residence is in Minnesota, are eligible.

The prize will not be awarded to any member of this Society.

All these must be submitted before Dec. 31, 1927. Candidates should notify the secretary, Dr. E. L. Gardner, 610 Yeates Building, Minneapolis, Minnesota.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

E. Bilhuber, Inc.:

Bromural.

Parke, Davis & Co.:

Diphtheria Toxin-Antitoxin, 0.1 L+-P. D. & Co.

Swan-Myers Co.:

Capsules Ephedrine Hydrochloride-Swan-Myers, 0.05 Gm.

TRUTH ABOUT MEDICINES

Acetarsone-Abbott.—A brand of acetarsone-N. N. R. For a discussion of the actions, uses and dosage of acetarsone, see New and Non-official Remedies, 1927, p. 83. This product is supplied in substance and in 0.25 Gm. tablets. Abbott Laboratories, North Chicago.

Erysipelas Streptococcus Antitoxin (Concentrated)-Mulford.—An erysipelas streptococcus antitoxin (New and Non-official Remedies, 1927, p. 337) prepared by injecting horses intradermally with strains of hemolytic streptococci isolated by H. Amoss from human cases of erysipelas lesions, bleeding the horses and, when test bleedings show the serum to have reached the desired potency, separating the serum, sterilizing it, and preserving by the addition of 0.35 per cent of phenol. The product is then concentrated by a process which preserves both the antitoxic and anti-bacterial properties claimed to be in the original serum. The product is marketed in packages of one 20 c.c. syringe. H. K. Mulford Co., Philadelphia.

Cholera Bacterin (Cholera Vaccine).—This cholera vaccine (New and Non-official Remedies, 1927, p. 358) is also marketed in packages of one 20 c.c. vial containing 1,000 million killed cholera vibrios per c.c. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., September 10, 1927, p. 883.)

Iodoxybenzoates.—Iodoxybenzoic acid resembles salicylic acid, chemically differing in that the hydroxyl group of the latter has been replaced by an iodoxy group. The known actions of the salts of iodoxybenzoic acid, as developed by investigators, led up to its clinical application by Young and Youmans in the treatment of arthritis. The investigators, in their introduction of the substance, used the sodium salt or ammonium salt prepared extemporaneously; later, they recommended the use of ammonium iodoxybenzoate. The salts of iodoxybenzoic acid are indicated chiefly in arthritis. They are reported to be preferably administered intravenously; however, for cases in which the drug cannot be given intravenously, oral administration and administration by high enema have been employed and found effective.

Amiodoxyl Benzoate (Ammonium o-iodoxybenzoate).—The ammonium salt of 2-iodoxybenzoic acid. The latter differs from orthohydroxybenzoic acid (salicylic acid) in that the hydroxy group is replaced by the

iodoxyl group. It contains 42.7 per cent of iodine. For a discussion of the actions and uses, see the preceding article "Iodoxybenzoates."

Amiodoxyl Benzoate-Abbott.—A brand of amiodoxyl benzoate-N.N.R. Abbott Laboratories, North Chicago.

Capsules Ephedrine Hydrochloride-Swan-Myers, 0.05 Gm.—Each capsule contains Ephedrine Hydrochloride-Swan-Myers (Jour. A. M. A., April 16, 1927, p. 1235) 0.05 Gm. Swan-Myers Co., Indinapolis.

Ephedrine Sulphate-Abbott.—A brand of ephedrine sulphate-N.N.R. For a discussion of the actions, uses and dosage of ephedrine sulphate, see *The Journal A. M. A.,* March 19, 1927, p. 925. Abbott Laboratories, North Chicago. (Jour. A. M. A., September 24, 1927, p. 1061.)

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

OVARIAN CYST COMPLICATING PREGNANCY*

REPORT OF CASE

ROBERT E. MCDONALD, M.D.
Minneapolis

M. K., a housewife twenty-three years of age, was admitted on the obstetrical service June 23, 1927. The period of gestation was about seven and one-half months, the last menstrual period having ended November 15, 1926.

On the morning of the day of admission the patient began to have pain in both groins, dull and constant in character but not simulating labor pains as she had experienced in her only other pregnancy two years ago.

Family history reveals tuberculosis in the mother, who lived sixteen years after the diagnosis had been made and then died following a paralytic stroke.

The patient states that she had typhus fever when a small child. In 1925 she was delivered of a normal child after a primiparous labor lasting six hours. She had a second degree laceration of the perineum which was repaired at the time and convalescence was uneventful.

Since becoming pregnant this time, there have been irregular periods of nausea and vomiting throughout the entire seven and one-half months. During the week prior to coming to the hospital, there had been blurring of vision and occasionally a transient diplopia. When pain in her lower abdomen and groins began June 23, the patient believed she was going into labor prematurely and came into the hospital that evening. By this time the pain had become so acute that morphine was required to give rest. It was evident that the pain she was suffering was not due to uterine contractions. Pressure in the left groin particularly caused great distress. The pain was constant and no uterine contractions could be felt on palpation of the abdomen. The patient was observed for three days, during which time it was necessary to relieve her with sedatives and opiates.

Physical examination showed a normal, well developed woman whose abdomen was distended to more than the size of full term pregnancy. She could not now be upon her feet because that aggravated her pain. The uterus was very difficult to outline either by abdominal or bimanual examination, but on palpation of the abdomen a sensation of fluid wave and fluctuation could be elicited. Dullness on percussion was met with throughout the entire abdomen and change of position did not create any areas of normal tympany. Pain, most marked in the left lumbar region, was brought out by Murphy percussion, though most of the patient's constant distress had shifted to her right groin the day after she entered the hospital. Fetal parts were difficult to identify but it was thought that the back could be outlined on the left, with the small parts on the right, the breech in the fundus and the head in the pelvic brim but not engaged. The cervix was neither effaced nor dilated. The fetal heart could at times be indistinctly heard in the left lower quadrant. Pelvic measurements were normal; interspinous 25.0; intercristal 29.0; intertrochanteric 36.0; and external conjugate 22.0.

An *x*-ray picture showed a single, small fetus, with the head in the pelvis, back to the left and small parts on the right. The size of the fetus was not commensurate with the abdominal physical findings so a diagnosis, from the roentgenologist's viewpoint, of polyhydramnios was made.

The blood pressure was at no time elevated. A systolic pressure of 124 and a diastolic of 64 was the average maintained.

Except for a faint trace of albumin, the urinary findings were normal. Blood findings were also normal.

For three days this patient was kept in bed with a tentative diagnosis of acute hydramnios or twin pregnancy.

On the evening of the third day the patient was taken to the delivery room and fully prepared in the lithotomy position, the intention being to pierce a small hole in the membranes and allow the amniotic fluid to drain away slowly. No rectal examination had been done recently for it was not thought that the patient was in labor. However, before the membranes could be ruptured there was one hard pain followed immediately by protrusion of the amniotic sac from the vulva. The membranes were then ruptured and the patient was delivered, spontaneously, of a small female infant weighing 2,130 grams. The position was O.L.A. The amniotic fluid lost was estimated not to have exceeded 500 to 600 cubic centimeters.

Although the decrease in the size of the abdomen after delivery was perceptible, it was still distended but the pain was noticeably diminished. The puerperium was uneventful except for the persistence of the

*From the Obstetrical and Gynecological Service, Minneapolis General Hospital, Minneapolis.

patient's symptoms but to a somewhat lesser degree than they had been antepartum.

On the twelfth day postpartum a careful vaginal examination was made and a large tumor, semi-fluctuant and arising from the right adnexal region, was found crowding the uterus well over to the left side of the pelvis and posteriorly into the hollow of the sacrum. The tumor extended well up to the costal margins and caused slight embarrassment to respiration. The diagnosis made at this time was a large cyst of the right ovary and the patient was transferred to the gynecological service, where she was operated twenty-one days after delivery, under general anesthesia.

A midline suprapubic incision was made up to the umbilicus later being carried about three inches above and to the left of the navel to permit delivery of a very large tumor which was a right ovarian cyst tightly wedged into the pelvic inlet and rising above to the diaphragm. With considerable difficulty the cyst was delivered intact, being adherent to the peritoneum over almost the entire anterior surface. The real cause for the patient's pain was now explained by a complete twist of the cyst pedicle.

The patient again made an uneventful and rapid recovery and was now relieved of the pain she had experienced for nearly four weeks.

The following is the pathologist's report of his findings: "Gross examination: The specimen is a very large, unilocular cyst weighing fifteen and one-half pounds and containing two small adjacent cystic areas in its wall. There were 5,400 cubic centimeters of blood-tinged fluid and a considerable quantity of cheesy material and hair lying free in the folds of the wall on its interior surface. Microscopic examination: The wall is composed of thinned out connective tissue with occasional mucinous areas. No epithelium noted in sections cut. Diagnosis: Dermoid Cyst."

The patient remained in the hospital thirteen days after operation and was discharged feeling very well on the fourteenth day. The wound healed well. Since her discharge from the hospital, the patient has been seen twice in our out-patient clinic. She is now doing her own work and feels better than she has at any time during the past year.

THE DOCTOR'S REMEDY

"Get in the country," said the doctor; "long walks in the open air. No alcohol in any form, and one cigar a day."

"But—doctor—"

"One cigar a day!" reiterated the doctor firmly.

Six weeks later the patient returned to town.

"How do you feel?" asked the doctor.

"Splendid! Fit as a fiddle!"

"And you liked it all?"

"Yes; everything except the one cigar."

The doctor smiled. "The tobacco habit, my dear sir—"

"Isn't any joke," put in the patient ruefully. "It's hard for a man at my time of life to take up smoking!"

UNUSUAL FAMILIAL OCCURRENCE OF SPASM IN THE LOWER PORTION OF THE ESOPHAGUS AND IN THE PYLORIC SPHINCTER*

PORTER P. VINSON, M.D.
and
C. BAXTER BROWN, M.D.
Rochester, Minnesota

Although the etiology of cardiospasm is still obscure, it is evidently a disturbance of the neuromuscular mechanism of the esophagus.[2] It is not intended here to consider the etiologic factors in cardiospasm, but simply to call attention to the interesting circumstances of finding two cases of spastic obstruction at the cardia and one of congenital hypertrophic pyloric stenosis in three successive generations of a family. Although congenital hypertrophic pyloric stenosis may not be entirely spastic in origin it is generally believed that spasm is a prominent etiologic factor. The cases are those of a woman who had a spasm at the cardia, her son who had cardiospasm, and his son who had congenital hypertrophic pyloric stenosis.

REPORT OF CASES

Case 1.—A woman, aged fifty-one, came to the Clinic November 17, 1915, complaining of dysphagia of one and a half years' duration. She had noted obstruction to solid food at the cardia with frequent regurgitation and had voluntarily confined her diet to liquids, corn meal and other finely divided foods. It was easier for her to swallow warm than cold liquids. Belching and heartburn occurred once or twice a week.

Physical examination was essentially negative. Gastric analysis showed total acidity of 66, free hydrochloric acid 56, and combined acids 10. Roentgen-ray examination showed slight lagging of the barium meal at the cardiac end of the esophagus. November 20, 1915, a No. 45 French webbed bougie was passed into the stomach with slight resistance at the cardia. The patient swallowed normally after treatment and was dismissed. Mild spasm at the cardia was diagnosed. The patient received similar treatment in 1916, with the same result. In 1917, dilatation with a hydrostatic dilator was performed elsewhere and there was relief from symptoms for seven years.

The patient returned to the Clinic September 13, 1927, complaining of gradual return of dysphagia during the last three years. At first, the complaint was minimal, and she felt well for intervals of as long as six months, but during the last six months the dysphagia was almost constant and of increasing severity. Food seemed to lodge at the level of the lower part of the sternum, causing pain which was relieved by regurgitation. Solid foods were the chief offenders, but liquids caused some difficulty. There were irregular periods of complete freedom from symptoms, lasting for two or three days.

*From the Division of Medicine, Mayo Clinic, Rochester, Minn.

There had been loss of weight of 13 pounds. Roentgenographic examination of the stomach and esophagus was negative. A No. 45 French sound was passed into the stomach with complete relief of symptoms.

Case 2.—A man, aged twenty-nine, came to the Clinic November 19, 1921, complaining of intermittent dysphagia which had begun a year previously. Liquid food gave as much trouble as solid food. After eating, the patient had a sensation beneath the sternum as though "something were contracting." Regurgitation always relieved this sensation completely. On one occasion, food known to have been eaten twenty-four hours previously was regurgitated. Actual pain or nocturnal regurgitation was not present. He had been taking belladonna with temporary relief from symptoms. Without it, he had constant trouble. Nine months before examination at the Clinic, the cardia had been dilated elsewhere with complete relief from dysphagia for two months. Physical examination was negative. Roentgenographic examination showed cardiospasm with marked dilatation of the esophagus. November 21, 1921, the cardia was dilated with the hydrostatic dilator to 26 feet of water pressure, with moderate pain. Four days later, another roentgenogram showed marked lagging of the barium meal at the cardia, but the patient was completely relieved from dysphagia. He remained entirely well for two years. Mild recurrence of dysphagia necessitated another dilatation of the cardia April 23, 1925, with complete relief from symptoms.

Case 3.—The son of the patient described in Case 2, at eleven days of age, began to have projectile vomiting soon after food was taken. On the fifteenth day, Dr. Beeh, of Fort Dodge, Iowa, performed a Rammstedt operation for congenital pyloric stenosis, and the symptoms were completely relieved.

BIBLIOGRAPHY

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2. Vinson, P. P.: Cardiospasm. New Orleans Med. and Surg. Jour., 1926, lxxviii, 483-490.

ARTIFICIAL RIPENING OF FRUITS BY ETHYLENE

While the use of ethylene as a means of ripening fruit is of growing commercial importance the health phases have not yet been thoroughly considered. Certain fruits and vegetables are recommended by physicians largely because of their vitamin content; whether or not this is altered by ethylene has not been determined. Possibly, also, the fruits and vegtables may be picked earlier than is the practice today, thus shortening the period of irradiation by the sun. Physicians may well watch the development of this form of food enterprise; perhaps the time may come when certain everyday foodstuffs will be purchased on the basis of vitamin units. In the meanwhile, the use of vitamin-containing products in as near a "naturally ripened" condition as possible should be encouraged when used for prophylaxis against avitaminosis. (Jour. A. M. A., September 3, 1927, p. 792.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

INTUSSUSCEPTION: Alanson Weeks, M.D., and G. A. Delprat, M.D. (Archives of Pediatrics, August, 1927). Intussusception rarely occurs in adults. Most of the cases occur before the first two years of life. The ratio of male to female is given in different series as varying from two or three to one.

The factors causing intussusception have been discussed usually under two heads, either dynamic forces or mechanical. The commonest mechanical factor is a mucous polyp of the intestine or some other foreign body which may become attached to the wall of the intestine, as, for example, worms, and the pull of the peristaltic action tends to invert the point of attachment to within the lumen of the intestine.

Hypertrophic lymphoid tissue of the lower ileum in infants may act as a foreign body within the intestine and cause the same type of invagination.

Under the general heading of dynamic factors are usually considered variations of the tone or spasticity of the intestine. It has been suggested that a tightly contracted portion of the bowel may be forced into an adjacent atonic or relaxed portion, and that these conditions of alternate spasticity and relaxation, associated with probable hyper-peristalsis, are responsible for the intussusception.

The greatest chance of one portion of the bowel telescoping into another should occur where there is a sudden change in the diameter of the intestine, and it is at this point, in fact, that the great majority of intussusceptions occur, as for example at the ileocecal region.

The symptoms of acute intussusception are unusually typical. Practically every case appears in what has been a perfectly normal, healthy, happy child, and usually a fat one. The usual clinical picture presents

a violent onset of abdominal pain, shock and vomiting, which is later accompanied by bloody, mucous stools and the possible presence of a mass—tenesmus, leukocytosis of 15—20,000. A tumor mass usually can be felt, and here, differing from almost any serious abdominal condition of an acute nature, there will be no guarding of the muscles, so that palpation of the tumor is possible.

If an intussusception is of the ileocecal type and is up toward the hepatic flexure, the tumor may lie beneath the liver and escape palpation.

Diagnosis of intussusception may be confused with severe colitis, and vice versa. However, continued passage of blood-stained fecal matter rather than simple evacuation of the blood-stained contents of the bowel without further fecal matter, distinguishes between these two conditions.

In the early stages, the intussusception may sometimes be reduced by forcing water or air into the colon under some pressure. This can be best accomplished by inserting a small catheter with a bulb and valve attachment and clamping the fingers over the anus to prevent the immediate escape of gas or liquid.

If the intussusception is of some standing, fibrinous adhesions may occur between the serous surface of the two layers of intestine in contact with each other at the point of intussusception, and the adhesions may soon become firm enough to prevent its reduction by this method.

In operating upon these patients, a right rectus incision will give ample exposure. Gently milk the intussuscipiens about the head of the intussusceptum. In this way reduction can sometimes be rapidly accomplished.

The intussuceptum will be found to be dark and congested. It is well to wrap this in warm towels for a few minutes to be sure that the color improves and that peristaltic waves may be seen to pass across these dark areas. If it is seen that peristaltic waves come up to but do not pass a dark area of intestine and there is no response to compressing in warm towels after a few minutes, resection of that portion should be considered.

SOME OBSERVATIONS ON THE CORRELATION OF PHYSICAL FINDINGS IN THE CHEST IN INFANCY, WITH PATHOLOGY: Coursen Baxter Conklin, M.D. (Archives of Pediatrics, February, 1927). At birth the thorax is more often conical in shape; at times, however, cylindrical. The antero-posterior and the transverse diameters are equal. Respiratory movements are diaphragmatic owing to the weakness of the pectoral and intercostal muscles and also the horizontal position of the ribs. The breathing is shallow and more rapid because of posture. The abdominal viscera interfere with free diaphragmatic movements. Along about the sixth month, however, when the baby begins to sit up, a transition occurs. The ribs become more oblique. The chest muscles become stronger with a resulting greater amplitude of respiratory movements and consequently a shortening of the antero-posterior diameter of chest.

In 99 per cent of children under 10 years and in 95.3 per cent over 10 years, D'Espine's sign corresponds with roentgen findings and that it is valuable in selecting cases to be rayed. Notation of respiratory rate and character is of little value as an early aid. Tactile fremitus is of doubtful assistance.

Percussion. In early infancy this not of great value as a change of note may often be developed by changing head from side to side and so putting muscles on stretch. The interscapular region should never be neglected. Percussion in the older child approximates its value in adult.

Auscultation. In beginning pneumonia there is diminution of breath sounds and on opposite side of chest the breath sounds may be harsher than normal. The breath sounds in the child are more harsh than in the adult. Again, breath sounds and voice sounds are transmitted with considerable clarity through pleuritic effusions. Râles and adventitious sounds of various kinds are transmitted through chest wall with intensity.

R. N. Andrews, M.D.

CHRONIC OTITIS MEDIA IN INFANCY: Edward S. Babcock, M.D. (Archives of Pediatrics, August, 1927). Otitis media is so common and the symptoms are so varied that no examination of a child is complete without looking at the ear drums. It is very simple to diagnose middle ear infection when the ear is draining or when the drum is acutely red and bulging, but it is not so easy to differentiate between the normal drum and the drum often found in chronic or subacute infections.

At birth the deeper portion of the external auditory canal is filled with caseous material. If this is removed, the tympanic membrane presents a quite constant picture. The drum is dull red in color with minute vessels visible on the surface, increasing with crying. The pars flaccida is not demarcated. There is no cone of light. The prominence of the short process of the malleus may be nearly indistinguishable. The drum periphery appears somewhat bulging, and the surface has little sheen except in the anterior inferior quadrant. As the infant grows older the appearance of the drum gradually approaches the adult type.

In chronic otitis the ear drum often has this newborn appearance, except that it is more often dull grey or creamy white than dull red or pink, and is oftentimes hard to differentiate from a normal drum which has not yet developed a mature appearance, such as prominent short process, sheen, etc. There is no definite symptomatology of chronic otitis. There may or may not be fever, crying, rubbing of ears, cough, poor appetite, vomiting, diarrhea, feeding disturbances, etc., or any of these may be present alone.

In a large number of these athreptic infants and others with any of the above symptoms a chronic otitis can be found by examining the ear drums.

Local treatment is directed at maintaining drainage. As long an incision as possible is made through the posterior half of the drum and the canal kept clean

with frequent irrigations of peroxide and water in equal parts. Even large paracenteses tend to close before the infection has subsided and repeated paracenteses are often necessary.

If there is demonstrable infection of the nasopharynx or of the paranasal sinuses these must be treated. Aside from the local treatment, autogenous vaccines and either quartz lamp or sun exposures are of value.

TUBERCULOSIS CASE FINDING IN CHILDREN: Henry D. Chadwick (American Review of Tuberculosis, 1927, XV, 601). Children in Westfield and Hampden County Schools of the grade school age were examined for evidence of tuberculosis. 8,519 were examined the first year and 19,073 the second year, averaging 130 cases a day. A clinic personnel of 17 persons including 5 physicians, 3 nurses, 4 stenographers, 4 nutritionists and an *x*-ray technician conducted the survey. Thorough examinations were made of the nose and throat, thyroid, heart and lungs, weight and temperature, von Pirquet tests were made in each case, those reacting to tuberculin having *x*-ray plates made.

The diagnoses were made by the chief of the clinic in consideration of history, physical examinations, von Pirquet, *x*-ray findings and the elimination of other diseases. Of the 8,519 examined the first year 2,235 reacted positively to tuberculin (774 refused the test). 410 were diagnosed as hilum tuberculosis; 1,080 as suspects; 25 as pulmonary tuberculosis; 494 had enlarged cervical lymph nodes, of whom 151 were reactors to tuberculin while 343 were not. 4,051 had defective teeth; 2,235 diseased tonsils and adenoids.

The examination of cases with reference to the relation of nutrition to reaction to tuberculin showed that more reactions occurred in the maltnutrition group than the normal or overweight children. The positive reactions to tuberculin were found to be fewer than usually quoted. Of the children of 5 years of age 18% reacted positively; 10 years, 32%; 15 years, 39%; no differences being noted in rural and urban localities.

Complete charts are published with the article.

Similar results were obtained in the second year group.

Dr. Chadwick concludes with the statement that tuberculin tests should be made in all children and that all reactors should be *x*-rayed.

D. W. Hutchinson, M.D.

PYLORIC STENOSIS OF INFANTS: F. F. Tisdall, M.D., M. W. Poole, M.D., and Alan Brown, M.B. (Amer. Jour. of Diseases of Children, August, 1927). The cardinal symptoms and signs are: (1) projectile vomiting; (2) visible gastric peristalsis; (3) palpable pyloric tumor, and (4) constipation with a small amount of material in the stool.

Pylorospasm, or hypertonia, is a distinct clinical entity that can be recognized and distinguished from pyloric stenosis. Furthermore, the authors believe that entirely different treatment is indicated in the two conditions, and that therefore these diseases should be carefully differentiated from each other.

A small amount of barium is addcd to breast milk which the infant is given while he is being observed under the fluoroscope. The rhythmic, snake-like, peristaltic contractions seen in the pylorus, independent of the contractions of the rest of the stomach, are absolutely pathognomonic of the condition. When 80 per cent or more of the food passes through the pylorus in four hours, although characteristic contraction waves are present, operation is deferred.

The most reliable single sign, however, in the diagnosis of pyloric stenosis is a palpable tumor.

Treatment.—The treatment of pyloric stenosis may be either medical or surgical. To be strictly correct, the so-called surgical treatment should be considered as a combination of both medical and surgical treatments. The Rammstedt operation, or some modification of it, is used almost exclusively.

Three main methods have been employed in the medical treatment of pyloric stenosis. The first is the refeeding of the infant after it has vomited. The second is the administration of atropine sulphate just before each feeding. The third is the use of a thick cereal feeding, advocated by Sauer.

Although many infants who are in good condition may be treated medically with success, the long hospitalization with continued exposure to parenteral infections, the additional care, the long continued anxiety for both the physician and the parents and the large amount of breast milk required—all these factors, combined with the low mortality rate of the surgically treated patients in this group (8 per cent), lead the authors to believe that it is advisable to submit all infants having pyloric stenosis to operation.

R. N. Andrews, M.D.

ENLARGEMENT OF THE SPLEEN IN CHILDREN: Adrien Bleyer, M.D. (Amer. Jour. of Diseases of Children, August, 1927). In three groups of cases of measles, comprising more than 500 cases, the spleen was found to be enlarged in 56 per cent. The appearance of the spleen at the height of the rash and the abrupt disappearance of the rash indicate that this reaction is related to the virus of this disease.

No such reaction as was observed in measles occurred in the other common diseases of children.

Active rickets shows enlarged spleens in about one case in three.

Inherited syphilis when active is characterized by enlargement of the spleen. Syphilis is, however, an uncommon cause of enlargement of the spleen in early life.

Enlargement of the spleen is common among apparently healthy infants and is thus of little diagnostic help at this time. This is particularly true during the middle months of the first year of life, when it may be observed in about one case in four. In the second year, it is about half as common as in the first year.

R. N. Andrews, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:

VIRGIL J. SCHWARTZ,
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,
FIDELITY BLDG., DULUTH

AN ENDOCRINE FACTOR IN OTOSCLEROSIS: Dana W. Drury, Boston (Acta Oto-laryngologica, Vol. X, Fasc. I). Otosclerosis must often be regarded as the result of metabolic disturbance involving one or all of the organs of internal secretion. It need hardly be stated, however, that not all cases of otosclerosis have an endocrine basis. Heredity is an important etiologic factor.

Foci appear especially in the bony capsule of the labyrinth, showing an increased cell-formation and calcium deposit. Here are large hollow spaces filled with enlarged blood vessels, causing the reddish hue often seen through the translucent drum. An increased connective tissue deposit is found between the vessels and the bone. These foci, usually situated in the lateral wall of the labyrinth, slowly enlarge; this wall gradually thickens, bony constriction and obliteration of the window margins follow, and finally there develops fixation of the stapes.

These foci are congenital, at least in many cases, but if they do not involve the fenestræ or the inner surface of the capsule, no symptoms may be observed. These points are usually reached at puberty, so it is at this time that evidences of otosclerosis are usually noted. As a rule, degeneration of the auditory nerve follows advanced changes in the bony capsule or membranous labyrinth.

In the adult the female gonads seem to play a much more important part than the male; indeed, it is frequently only after the first pregnancy that the existence of otosclerosis is discovered. Whatever the cause, early treatment is imperative if any hope for improvement is to be realized; it is therefore essential that children with a suspicious family history should be watched until the end of the second decade. Such children will very frequently show a hypofunction of the endocrine organs, with, consequently, a disturbed metabolism. The pituitary, the thyroid and the gonad are involved in the order given. Of these the gonad group shows the least response to treatment.

VIRGIL J. SCHWARTZ, M.D.

STUDIES ON THE VALUE OF MERCUROCHROME AS A DISINFECTANT IN OPHTHALMIC WORK: Helga Frandsen, Copenhagen (Acta Ophthalmologica, Vol. IV, Fasc. I). The use of mercurochrome 220 in 2 per cent solution as a conjunctival antiseptic has produced widely varying results. Introduced by Young, White and Schwartz as a non-irritant combination of the penetrating properties of fluorescein with the germicidal properties of mercury, its sponsors found that bladder epithelium and submucosa were stained—occasionally even the muscularis—five minutes after injection. They also found that staphylococci were killed in one minute by a 1/1000 solution of mercurochrome, in ten seconds by a 1/100 solution. Later, however, the germicidal value was found to be markedly less than at the first report, and on standing the solution was found to lose its bactericidal value.

In the present study, cotton applicators were used for taking cultures from the conjunctiva, and plating on blood agar. These specimens were then incubated for 48 hours and the colonies counted. Then 2 per cent mercurochrome was instilled into the eyes, and an effort made to see whether the conjunctiva could be sterilized and, if so, how long this condition would remain.

The first group had a mercurochrome instillation three times daily, and the cultures were taken twelve hours after an instillation. In a period of treatment varying with different cases from two to thirty-two days, and including sixteen patients, sterile cultures were produced only once or twice with five of the cases after many days' treatment, and this condition was very fleeting. In about half the cases there was some diminution in the bacterial content. The remainder were not affected.

The second group was treated as above, plates being made 12 hours after treatment, but following this mercurochrome was again instilled and the plating was repeated in one hour. Two of the four cases so managed showed a marked decrease in the number of colonies, one showed no change, while the last showed an increase.

The third group of six cases had a mercurochrome instillation three times at five-minute intervals, and the lids were painted with the solution at each time. The conjunctival sacs were then rinsed with sterile water for one minute. One case developed a sterile conjunctiva, three cases showed a diminished number of colonies, one was unchanged and one showed an increase.

In view of the above, and inasmuch as mercurochrome is precipitated by cocain, holocain, novocain, atropin, eserine, scopolamine and ether preoperative drugs with very irritating effect, the conclusion is drawn that mercurochrome has no value as a germicide in preparing for eye operations.

VIRGIL J. SCHWARTZ, M.D.

SEASICKNESS: K. Biehl (Acta Oto-laryngologica, Vol. IX. Fasc. 4). In a study of this condition all stages of illness may be encountered, from slight in-

disposition to a feeling, almost, of annihiliation. Whatever its degree, it is commonly ascribed solely to an irritation of the vestibular apparatus of the internal ear, this irritation being due to the motion of the ship. However, a number of facts may be adduced to contradict this theory. It is well to remember that old people and children under two years are rarely seasick.

The common symptoms are headache, nausea and vomiting. The first three patients observed on board ship showed interesting conditions: the first experienced no illness whatever during the first few days of the voyage, all of which were very stormy; however, on becoming greatly excited over an incident which took place on board, symptoms of severe seasickness set in. The second stated that she is so subject to the illness that even when looking at the motion picture of a rocking ship she becomes ill. The third suffered no nausea or vomiting, only urinary retention which disappeared on landing. The first case may have been due to vestibular irritation, but the other two could not have been; that is to say, some other factor must have caused the seasickness.

Persons troubled with this condition try to lie at right angles to the ship's course and as near its center as possible. A variety of symptoms may be exhibited, including peculiar smell sensations and optical effects, marked weakening of the pulse, and sexual instability.

While it is of course true that all the organs, among them the labyrinth, are affected by movements of the ship, the most pronounced action is upon the brain. The cerebral peduncles and the cerebellum are essentially floating bodies in a sort of cistern filled with fluid so as to support these structures in the manner of a water-pillow. If, therefore, the receptacle constantly changes its position, the floating bodies will have to change theirs also if they are to remain in equilibrium. Sometimes if the water-pillows are suddenly emptied with the head erect, the cerebellum will drag the cerebral peduncles downward into the foramen magnum, thus producing symptoms of brain-stem pressure. By lying down at right angles to the ship's axis the swaying of the peduncle and cerebellum will be reduced to a minimum, and this very position is instinctively sought by the seasick.

The subarachnoidal spaces of the spine continue upward as similar spaces, "cisternæ," at the base of the brain. These communicate through various foramina with the brain ventricles, forming a series of cavities and channels filled with cerebrospinal fluid.

Neumann believes that an important factor in seasickness is vagus nerve irritation. Politzer found *no nystagmus* in this condition, and others have found that nausea precedes dizziness, both of these facts being directly contrary to the usual symptoms of labyrinthine irritation,—from all of which the conclusion is drawn that the cause of seasickness is actually in the brain, and not only in the labyrinth.

Virgil J. Schwartz, M.D.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

Fistula of the Anus and Rectum. Charles John Drueck, M.D., F.A.C.S., Professor of Rectal Diseases, Post Graduate Medical School, Chicago. 318 pages. Illus. Cloth, $3.50. Philadelphia: F. A. Davis Company, 1927.

Surgical Diseases of the Gall-Bladder, Liver and Pancreas and Their Treatment. Moses Behrend, A.M., M.D., F.A.C.S., Attending Surgeon, Jewish, Mt. Sinai and Northern Liberties Hospitals; Instructor in Anatomy, Jefferson Medical College. 278 pages. Illus. Cloth, $4.00. Philadelphia: F. A. Davis Company, 1927.

Feeding and the Nutritional Disorders in Infancy and Childhood. Julius H. Hess, M.D., Professor and Head of Department of Pediatrics, University of Illinois Medical College. 5th edition revised and enlarged. 566 pages. Illus. Cloth, $4.50. Philadelphia: F. A. Davis Company, 1927.

Physical Diagnosis. Richard C. Cabot, M.D., Professor of Medicine, Harvard University. 9th edition revised and enlarged. 536 pages. Illus. Cloth, $5.00. New York; William Wood and Company, 1927.

Cancer Control. Report of an international symposium held under the auspices of the American Society for the Control of Cancer, Lake Mohonk, New York, Sept. 20 to 24, 1926. 336 pages. Chicago: The Surgical Publishing Company, 1927.

Gonococcal Infection in the Male. Abr. L. Wolbarst, M.D., Urologist and Director of Urologic Clinics, Beth Israel Hospital. 237 pages. Illus. Cloth, $5.50. St. Louis: C. V. Mosby Company, 1927.

Minor Surgery. Arthur E. Hertzler, M.D., F.A.C.S., and Victor E. Chesky, A.B., M.D., F.A.C.S. 568 pages. Illus. Cloth, $10.00. St. Louis: C. V. Mosby Company, 1927.

Emergencies of a General Practice. The Late Nathan Clark Morse, A.B., M.D., F.A.C.S. Revised and rewritten by Amos Watson Colcord, M.D., Surgeon Carnegie Steel Company, etc. 2nd edition. 541 pages. Illus. Cloth, $10.00. St. Louis: C. V. Mosby Company, 1927.

Nasal Neurology, Headaches and Eye Disorders. Greenfield Sluder, M.D., F.A.C.S., Clinical Professor and Director of the Department of Otolaryngology, Washington University School of Medicine. 428 pages. Illus. Cloth, $11.50. St. Louis: C. V. Mosby Company, 1927.

WILLIAM CRAWFORD GORGAS: HIS LIFE AND WORK. Marie D. Gorgas and Burton Hendrick. 359 pages, 10 illus. $5.00: Doubleday Page and Company, 1924.

This most interesting volume, although not a new book, merits consideration at the present time, or, as in other recently published biographies of prominent med-

ical men, it changes a mere name of medical history into a definite personality. This is written by his wife in conjunction with Burton Hendrick, a well known biographer, and is the story of the struggle of a brave spirit through years of misjudgment and misunderstanding to final appreciation from the entire world. It has a somewhat unique beginning in that it opens with the story of the meeting of himself and his wife, with their courtship during their convalescence from yellow fever, the disease which played so prominent a rôle in their lives.

William Crawford, an eldest child, was born in a colonial mansion near Mobile, with a father who was an Army Officer and a mother who was a cultured, refined southern woman who exerted a profound influence upon her distinguished son throughout her long life. The Civil War prevented his early education and brought poverty upon the family by leaving his father, demobilized from the Confederate Army, without any profession. Soon afterwards he was given the presidentship of the Sewanee College where William Crawford grew up, obtained his education and decided upon a career in the Army. He failed to get his West Point appointment and so decided to study medicine in order to become a medical officer. The first twenty years of his life in that capacity was a humdrum existance and included, besides his routine duties, medical services to the entire country-side. Since he was immune he was often sent to yellow fever epidemics where he developd unusual skill in handling the disease and pondered much upon the unknown etiology.

In 1898 he was sent to Havana as Health Officer and attempted to eradicate yellow fever by cleaning up that filthy city. But after he had achieved the almost impossible and had it spotless both outside and inside the houses, the dread disease continued to flourish, especially in the better quarters of the city. When the situation became quite desperate the government appointed a yellow fever commission of Walter Reed, James Carroll, Jesse Lazear and Aridtides Agroments, who, at the cost of the life of Lazear, definitely fixed the responsibility upon the Stegomyia mosquito. Gorgas was cautious at first but finally became firmly convinced and at once began an attempt to exterminate the mosquito, an apparently impossible task in that insect ridden city. He found that it was a domestic insect living around the habitations of man and demanding clear water for the depositing and hatching of its eggs. He accomplished his purpose by removing every open vessel containing water (even flower vases) and screening the larger ones which must be saved for use. The city was divided into districts, visited once a month, and every pail, pitcher and vase accounted for, a task accomplished only by infinate tact, endless patience and attention to minute details. In 1896 there had been 1,282 deaths from yellow fever and in 1900, 310, but Gorgas began his work in March 1901 and after that there were but 5 cases of the disease. To be sure there was another outbreak (in 1905) which was promptly checked by Gorgas' methods and after that the disease was unknown in a city which had been practically yellow fever head-quarters for centuries. To Reed belonged the glory of discovery but to Gorgas belonged the glory of application and accomplishment. Neither could have been complete without the other.

Following this he was made Colonel and put in charge of the sanitation of the proposed building of the Panama Canal, a project which had already been attempted and abandoned by the French because of the overwhelming mortality among the laborers, which was 20,000 (or about a third of the entire number). During the next years Gorgas worked under the greatest of difficulties, with very little staff, practically no supplies and no understanding or coöperation from the Army officials who were not convinced of the guilt of the mosquito, were concerned chiefly by economy and speed and spent the greater part of their time in Washington. Of course yellow fever broke out as soon as the laborers landed, but working, practically single-handed, Gorgas controlled it by exterminating the mosquito, just as he had done in Havana. Instead of receiving recognition for this accomplishment he was blamed for the presence of the disease and his recall asked for. The American Medical Association sent down, for quiet investigation, Dr. Charles Reed who returned to air the whole disgraceful situation in the press. The ridicule resulted in the recall of the seven men in the commission in charge of the Panama Canal and the retaining of Gorgas under better working conditions. After yellow fever had been vanquished he turned his attention to the banishment of maleria by the extermination of the Anopheles mosquito. This task was even more difficult for this was a different mosquito breeding in outside pools which were so numerous in a rough country with a heavy rainfall, and, largely due to lack of coöperation of the commanding officer, Dr. Goethals, was never entirely accomplished. And in the final government report of the building of the Panama Canal the work of Gorgas received no recognition. After the great canal was finished and Gorgas, with several companions, in a canoe was the first to traverse it, he turned to other worlds to conquer. In 1913 he went to South Africa to investigate the cause of pneumonia among the negro laborers in the mines. He found it to be due to overcrowding with great temperature changes and practically wiped it out by improving the sanitation of the camps.

He next assumed the Surgeon-Generalancy of the World War and here his less spectacular accomplishments included the successful mobilization of great medical units and the satisfactory sanitation of huge soldier camps in both this country and France. As soon as the Armistice was signed he was retired for age and at once accepted a British Commission for the eradication of yellow fever in Africa. He went to London and in the midst of the greatest honors that may come to any medical man he suffered the stroke which so soon proved fatal.

His own philosophy was voiced when he said in speaking of a sanitation officer, "If he believes in it, has tact, is enthusiastic, and persevering, he will succeed.

If he is discouraged by difficulties and opposition he will fail even if his system is correct." And a British communication said of him: "He was one of Life's great helpers for he cleaned up foul places and made them sweet" and also "He brought the knowledge of the laboratory into the field and swept disease from vast areas."

MARGARET WARWICK, M.D.

PRACTICAL OTOLOGY. Morris Levine, M.D., Assoc. Prof. of Otology, New York Post Graduate Medical School. 385 pages. Illus. Cloth, $5.50. Philadelphia: Lea and Febiger, 1927.

This book lives up to its title, as it deals entirely with the practical phases of otology. The author's own experience is given and his teachings agree with those of other authorities. This work will be a great help to the student who wants practical advice in otology.

As in most new books some errors are to be found which will probably be corrected in later editions—for example, on page 324, he states that in a diffuse type of suppurative labyrinthitis there may not be complete loss of function.

The subject of suppurative mastoiditis, both acute and chronic, is very well dealt with, particularly the discussion of the indications for surgery.

KENNETH A. PHELPS, M.D.

SKETCH OF THE HISTORY OF THE MAYO CLINIC AND MAYO FOUNDATION. From Division of Publications, Mayo Clinic. 177 pages, 17 illustrations, 11 tables. Price $3.50. Philadelphia: W. B. Saunders Co., 1925.

This small volume is, as explained in the introduction, a skeleton of facts upon which some historian may construct a complete and interesting picture of the growth of the Mayo Clinic and Mayo Foundation, and it should be available in every medical library for reference use.

The first three chapters make interesting reading as they tell of the early life of Dr. William Worrell Mayo and, with his illustrious sons, his establishment of the Mayo Clinic and the opening of St. Mary's Hospital. Chapters on the development of the different specialties, the division of records, correspondence and publications, brief sketches of early non-medical employes, copies of the documents drawn up in 1919 to form the Mayo Properties Association, relationship of the Clinic to other organizations in Rochester, and the foundation of the Physicians and Surgeons Club is set forth in a series of brief dry facts. The affiliation with the University of Minnesota in the formation of the Mayo Foundation is given in detail, together with copies of the legal documents drawn at the time and a report of the work thus far accomplished.

MARGARET WARWICK, M.D.

OBESITY. Leonard Williams, M.D. 165 pages, $3.35. Oxford University Press, 1926.

Dr. Williams evidently considers that the acquisition of fat is the greatest of unpardonable sins and is the cause of the majority of the ills to which the flesh is heir. He tells us that obesity is the usual cause of indolence and stupidity, of asthma, of diabetes, of arteriosclerosis and coronary sclerosis (by pressure on the outside of the blood vessels), of dyspepsia (from accumulation of fat in the liver), of constipation (by pressing upon the colon) and of subnormal temperature (always found in obesity).

For treatment of this most dangerous of conditions he advises the administration of iron, the raising of the body temperature by hot packs, inactivity (exercise is dangerous) and decreased food intake (using especially "unfired" foods) and a three day fast once a month (in which there is no danger and no discomfort).

This book holds nothing of interest to either the lay or medical reader except to show what vagaries are possible in a physician.

MARGARET WARWICK, M.D.

FEAR—THE AUTOBIOGRAPHY OF JAMES EDWARDS. John Rathbone Oliver, M.D. 364 pages, $2.50. New York: The MacMillan Co., 1927.

This fictitious autobiography is written by a physician, a psychiatrist at Johns Hopkins University. Under the guise of fiction he presents the effect of fear upon health and happiness, together with the methods and effort necessary to overcome it.

The story is that of James Edwards, who, at the age of fifty, was refused life insurance because of high blood pressure, at which he became so frightened that he is finally mentally and physically incapacitated. He is sent to a "Nursing Home" where he stays until he regains his health, and meanwhile writes his own story of the methods that finally brought him back to a normal outlook on life. His neurologist, whom he calls his "Fear-Hunter," gives him long explanations of the origin, mechanism and results of fear, and manages by means of talks, selected books, environment and religion, to dispel his fear neurosis and bring him back to his normal self.

The chapter on involutional depression or restlessness is given in so very clear and interesting a manner that it, in itself, justifies the book. There is much of interest in the story but the average reader will find the action slow with too many details and will feel that much chaff must be tossed aside to find a few grains of wheat.

MARGARET WARWICK, M.D.

A YEAR IN REVIEW

The tremendous strides which have been made toward elimination of the principal causes of blindness in the eighteen years since the origin of the movement for the conservation of vision are revealed in the Annual Report of the National Committee for the Prevention of Blindness, which is being sent to its 20,000 members.

The report entitled "A Year in Review" shows that the percentage of children in the schools for the blind who lost their sight because of ophthalmia neonatorum (babies' sore eyes)—for centuries the principal cause of blindness—has been reduced more than 51 per cent during the life of the Committee. It announces the establishment of the country's first preschool eye clinics for the examination of the eyes of children too young to read, and describes how in these clinics it has become possible to test the sight of children as young as two to six years.

The report shows that in 1913 there were throughout the United States only two sight-saving classes for the education of children with seriously defective vision; that in 1926 there were 265 such classes; but that this is only 5 per cent of the number of such classes needed to provide education for children with serious eye defects without further endangering their sight. More than 4700 additional sight-saving classes are needed, according to the Committee for the Prevention of Blindness.

In charts based on the experience of several of the largest industries of the country, the Committee reports that well organized sight conservation work has made it possible for these companies to save 99 per cent of the expense previously incurred through eye accidents and to save 92 per cent of the time previously lost as the result of eye accidents. Notwithstanding these accomplishments in some plants, the Committee says "hundreds if not thousands of eyes and millions of dollars are still lost annually because of the eye hazards of industrial occupations. Any permanent reduction of these hazards calls for the provision and use of mechanical safety devices, the provision of adequate lighting and sanitary facilities, and the continued education of employers, employees and governmental officials."

In a foreword to the report, William Fellowes Morgan, President of the Committee, says: "The underlying cause of blindness, whether it be the result of disease or accident, is usually ignorance. The work of the National Committee for the Prevention of Blindness is, therefore, concentrated largely on pointing the way. Its function is to keep abreast of the scientific advances in medical and pedagogical knowledge and to inform the public, in layman's language, of such advances and how they may be applied practically in preventing blindness and in saving sight."

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LOCUM TENENS WANTED—By University of Minnesota graduate. Available November first. Address C-149, care MINNESOTA MEDICINE.

WANTED—Locum tenens work. Illinois M.D.; internship Ancker Hospital, Saint, Paul, age 26, single, Minnesota license. Available on short notice. Address C-144, care MINNESOTA MEDICINE.

LOCUM TENENS OR ASSISTANTSHIP DESIRED—By experienced physician, licensed in Minnesota. Available immediately. Address C-147, care MINNESOTA MEDICINE.

MINNESOTA MAN desires locum tenens work. Available November 15. Address C-154, care MINNESOTA MEDICINE.

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TULAREMIA: A COMPARATIVE STUDY OF FOUR CASES ORIGINATING IN MINNESOTA*

L. L. Merriman, M.D.

Duluth, Minnesota

A NEW disease, discovered by Americans, one of few infections transmitted from lower animals to man directly or indirectly through the medium of parasites, a disease appearing in four distinct and characteristic forms, with a morbidity and mortality toll as serious as that of typhoid fever, resistent to all present forms of therapy, and occurring in an alarming and increasing frequency in all parts of the country—all these facts make the study of tularemia one of the most interesting and outstanding developments in clinical medicine in the past decade.

Tularemia is primarily an acute infectious disease of rodents and wild rabbits and secondarily a disease of man.

HISTORY

In 1907 Dr. Ansel Martin of Phoenix, Arizona, described some cases in man as "rabbit septicemia" which, judging from their clinical course, and the fact that two of these cases still give typical agglutination tests, were doubtless cases of tularemia.

In 1910 Dr. R. A. Pearse of Utah referred to a disease of rabbits transmissible to man.

Since 1911 a disease called "deerfly fever" has been recognized as a clinical entity in Utah.

In 1912 McCoy and Chapin described the disease in rodents and isolated the causative organism and named it *Bacillus tularense*. It was so named after Tulare County, California, in which it was discovered.

In 1919-20 Francis isolated the organism from human cases, indentified it with that found in rodents, and named the disease "Tularemia" on account of the presence of the *B. tularense* in the blood. In 1925 Francis published a very comprehensive description and classification of the various clinical forms of the disease.

Since then, numerous cases have been reported from over half of the states of the Union. Francis reported 295 cases up to March, 1927.

Ohara reported a similar, possibly identical, disease in Japan in 1925.

Dr. Rutledge of Detroit, Minnesota, reported the first case originating in this State, which occurred in his practice in August, 1926.

In nature, tularemia occurs in wild rats, ground squirrels, wild rabbits (snowshoes, cottontails and jackrabbits). The organisms are found in horseflies or deerflies, wood ticks, bedbugs, and the rabbit louse. It also occurs about the mouths and teeth of animals that have eaten or bitten diseased rodents or rabbits.

It may be transmitted to man by: (1) handling of diseased animals; (2) contamination of the hands or conjunctiva with the tissues or body fluids of diseased animals; (3) the bite of diseased animals; (4) contamination of the hands or bites of flies, ticks, bedbugs, or lice which have bitten diseased animals; (5) the bite of any animal that has eaten diseased rodents or rabbits. The only case in which transfer from man to man has occurred was reported by Harris, in which the mother was believed to have been infected through a prick of her thumb while dressing an ulcer on her son's hand. The organism apparently has the ability to penetrate the unbroken skin or conjunctiva; but a frequent portal of entry is a wound existing before contact or occurring at the time of contact. Laboratory workers are very prone to contract the disease. A report of four cases by Freese and Francis in February, 1926, would suggest the possibility of infec-

*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

tion from eating insufficiently cooked rabbit meat, although thorough cooking kills the organism.

The causative organism is gram negative, nonmotile, and non-spore bearing, occurring in both bacillary and coccoidal forms; the older the culture is, the more the cocciodal type prevails. It occurs early in the disease in the blood of the lower animals as well as in man and in the cœlomic fluids of the above parasites. It grows well on coagulated egg-yolk and blood glucose cystine agar, but not on ordinary media. Coverglass preparations stain best with aniline gentian violet. In sections of tissue it stains best with Giemsa's solution.

The incubation period varies from twenty-four hours to nine days; in most cases three or four days.

The onset is sudden, with severe headache, chills, fever, nausea and vomiting, general pains, sweating, and prostration. Francis states that fever is always present and tends to be characterized by an initial rise for one to three days followed by a remission of fever and other symptoms for one to three days, followed by a secondary rise which gradually declines to normal, the whole febrile period lasting two to three weeks. The local symptoms depend upon the clinical type of which Francis has described four.

In the ulcero-glandular type there is pain, tenderness, and slight enlargement of the lymph glands draining the portal of entry. When no wound is present, about twenty-four hours after symptoms begin, a painful papule appears at the site of infection, which breaks down and a necrotic core leaves a punched out ulcer with raised edges. When a wound is present, what appears perhaps as an insignificant or healing wound becomes freshly inflamed, necrosis of the center takes place, leaving a punched out ulcer which heals slowly. Red streaks may extend from the wound with subcutaneous nodules along the lymphatics. The glands break down in about half of the cases.

In the oculo-glandular type the symptoms are similar except that the portal of entry is in the conjunctival sac. At first there is irritation, lacrimation, local edema and usually first a papule then an ulcer on the inner surface of the lower lid. The lymph glands of the face and neck, the salivary glands and in some cases the axillary glands become swollen and tender.

The constitutional symptoms are similar to those of the ulcero-glandular type except possibly more severe.

In the glandular type the same glandular and systemic symptoms occur, but there is no ulcer or wound. This type is seen most frequently in laboratory workers.

In the typhoidal type, fever is the only outstanding symptom, there being no glandular or localized symptoms.

There has been a definite skin eruption reported in twelve cases which was macular, papular, or pustular.

The systemic symptoms are essentially the same in all types, the acute period lasting two to four weeks, followed by a period of prostration or very slow recovery lasting from three weeks to several months.

Prognosis.—The period of disability is rarely less than a month. While the mortality rate is not high, every now and then a fatal case occurs. Rutledge's case was the eighth fatal case in the United States up to August, 1926. Since then several have been reported. The morbidity is uniformly high.

Diagnosis.—Tularemia is most frequently confused with typhoid fever because of the similarity in the symptoms and the tendency to a moderate leukocytosis if any and a low pulse-temperature ratio. It may be confused with septicemia on account of the infected wound and glandular symptoms. It may simulate tuberculosis on account of the character of the lesions in the lymph glands. It may be called "undulant fever" or malta fever on account of cross agglutination with *B. abortus* and *B. melitensis.*

The following facts are valuable in establishing a diagnosis: (1) a history of contact with rabbits or rodents or of bites; (2) a primary papule or wound developing into a punched-out persistent ulcer, or a primary conjunctivitis followed by an ulcer; (3) persistent local glandular enlargement; (4) fever of two to four weeks duration; (5) negative Widal; (6) a relatively low leukocyte count. The diagnosis is practically proven by an agglutination of *B. tularense* by the patient's serum. This is being done by the Minnesota State Board of Health Laboratory at Minneapolis and at the Hygienic Laboratory at Washington, D. C.

One attack apparently confers immunity in man.

Prophylaxis. — Laboratory workers, cooks, market men and hunters should wear gloves when handling rabbits. In infected areas the public should be warned not to expose themselves to danger. Therapy up to the present is symptomatic. Rest in bed is the most important. Glands should be incised or excised only after they have softened.

Pathology.—In man, subacuteness approaching chronicity is characteristic of the ulcers, the regional lymph glands and the subcutaneous nodules along the lymphatics and of the small nodular lesions in the spleen, liver, kidney and adrenals.

I wish to make a comparative study of four cases of tularemia which have come under my observation—the first four cases I believe to be reported as originating in the State of Minnesota.

CASE REPORTS

The first case was seen in consultation with Dr. Lloyd Rutledge of Detroit Lakes, Minnesota, on September 3, 1926, and reported by him in Minnesota Medicine in February, 1927. With his permission I wish to review the salient features of the case.

Case 1.—Mrs. J. H., aged 59, lived three miles from Detroit Lakes, Minnesota, and was taken care of at her country home. In order to illustrate the difficulty with which a correct diagnosis was made, the writer shall not follow the usual order but will give the data in the order in which they were obtained. On August 27, 1926, the patient became acutely ill with severe headache, backache, vomiting of bile and temperature which rapidly mounted to over 102. She felt very sick and went to bed. On the next day pain developed in the right upper abdomen and there were chills and a rise of the temperature to 104.6. The leukocyte count was 5,000; Widal negative. On the third day the stools became frequent and of peasoup character. The patient complained of feeling very tired. At that time a small wound was noted on the left thumb. This was opened and some pus escaped. Slight cough occurred upon turning over. She complained of feeling very tired. On the fourth day the wound was more angry, and more pus was present. Dyspnea increased, respiration was 28, temperature 102. The glands in the left axilla now became enlarged, hard and quite tender and the patient became extremely weak. The leukocyte count was now 12,500. On the fifth day there were peasoup stools containing blood. There was some tenderness over the gall bladder region. Some epistaxis occurred. The writer was called in consultation. I found her extremely ill, having all the appearance of a severe case of typhoid fever. There were râles but no dullness in the chest, tenderness but no rigidity over gallbladder region and tenderness over the right ribs. There was a punched out ulcer in the wound on the thumb with a necrotic floor which seemed to burrow back under the walls. Distinct beading could be felt and seen along the lymphatics up the forearm. Epitrochlear and axillary glands were enlarged, discrete, non-fluctuating and quite tender, though not as tender as is usual in a case of streptococcus infection. In going over the events preceding the onset of illness several incidents had taken place which tended to confuse us. Four weeks before the onset of illness she had been at a summer resort and had drunk water, of the purity of which she was not sure. Three weeks before, she had fallen down stairs severely injuring her right side just below the rib margin, and bruising her head, arm and leg so that she was black and blue for days; in fact, she had not felt very well since the injury. On several occasions in the past two years she had had pain in the right upper quadrant and on one occasion a physician had diagnosed gallbladder disease. About two weeks before, she cut her left thumb on a tin can but the wound had practically healed. One week before, she had gone to a fair and had drunk some lemonade which made her and three other members of the family quite ill with an acute diarrhea. The writer agreed with Dr. Rutledge that this was a peculiar case, not typical of anything we had ever seen, but that it should be treated as a case of typhoid fever until further Widal tests might confirm or rule out that diagnosis. However, we could not ignore the possibility of septicemia, in view of the acute symptoms in the infected hand, and every possible means was used to combat that infection. Just before leaving the house the writer recalled having read something about tularemia and upon inquiry I found that the patient had dressed a cottontail rabbit on August 21st, six days before the onset of the illness, but that the flesh of the rabbit was apparently normal and was eaten by the entire family. On account of never having heard of a case of tularemia in this part of the United States and not knowing much about it, the diagnosis of tularemia was not seriously considered at that time. Blood for a second Widal was taken and found negative. Cultures of the stool and urine were made on Endo's media and no acid producing colonies were found. Blood cultures were negative on broth and plain agar. The patient continued to grow worse with a temperature ranging around 102, extreme prostration and delirium. The ulcer on the hand did not heal. Vesicles developed on the buttocks. On the ninth day a papular eruption occurred and on the twelfth day about two dozen pustules very much like those of smallpox except that they were not umbilicated and were more superficial developed on the trunk and thighs. When the laboratory tests all failed to confirm the diagnosis of typhoid fever or septicemia and after reading Francis' article in the Journal of the A. M. A. of April, 1925, again the writer was convinced that this was a case of tularemia and telephoned Dr. Rutledge to that effect and suggested that blood be sent at once to the Hygienic Laboratory at Washington, D. C. Dr. Wm. Long of Fargo was called in consultation in the meantime and I understand that he also considered tularemia as a possibility. By that

time the patient's eondition was so poor that blood was refused. The patient died on the fourteenth day of illness. Autopsy was not obtained. Blood was taken from the braehial vein after death and it was found to agglutinate the *B. tularense* in dilution from 1:10 to 1:320 and produeed typical lesions in guinea pigs. Bodies of rabbits found dead in the neighborhood were sent to the laboratory and they likewise gave positive agglutination tests and produeed charaeteristic lesion in guinea pigs. A letter from Dr. Franeis of the United States Publie Health Service informed us that this was the first ease of tularemia in Minnesota and the eighth fatal ease on record in the United States. The writer reported the ease to the staff of St. Luke's Hospital of Duluth a few days later.

Case 2.—J. L., married, aged 63, entered St. Mary's Hospital, Duluth, Nov. 16, 1926. I saw him at the invitation of Dr. Hirschboeek. He skinned a rabbit whieh he shot in township 14, Eagle Lake, St. Louis County, Minnesota, Sunday, Oetober 30, 1926. At the time, he had a small eut on the forefinger of the left hand. On the following Tuesday he developed chilliness, felt "grippy" and had a slight cough. He came to Duluth, where he was seen about a week after onset, complaining of eough with very little expeetoration, marked weakness, and fever. He entered the hospital on the sixteenth day of the illness.

His past history was of no interest exeept that he stated that he had had typhoid fever twiee, at twenty-one and again at thirty-four years of age.

Physieal examination showed a poorly nourished man, appearing older than his age. The skin was dry, but no rash was present. Movement or even talking tired him. A dry but only slightly produetive eough was present. No eonjunetivitis was present and only a suggestion of exophthalmos was noted. The left pupil was larger than the right, and pupillary reflexes were sluggish to light and aeeommodation. The mouth was dry; the tongue slightly eoated. The ehest was normal except for wheezing dry râles in both bases. The heart was normal. In the abdomen no masses nor tenderness was present.

On the left forefinger was a small eut with edges undermined and a small amount of dirty gray pus underneath. The uleer was indolent in appearance, there being no great amount of swelling, redness or tenderness. On the twenty-ninth day the ulcer had apparently healed over but upon elose examination slight fluctuation was diseovered and upon opening it a small amount of dirty gray pus was expressed from the deeper tissues. The pus had a tendeney to burrow deep into the tissues very much like a lesion of impetigo eontagiosa. This pus could be expressed eaeh day for several days. There were four or five axillary lymph glands, varying from the size of a hazel nut to a small walnut, diserete, movable, not fluetuating, only slightly tender. The epitroehlear gland was also palpable. X-ray showed diffuse shadows about the bronehi in both bases. The hemoglobin was 80 per eent and the erythroeyte count 4,500,000 upon admission—70 per cent and 3,710,000 respeetively on diseharge. The leukoeyte count was 4,000 on the fifteenth day of the disease, 11,400 on the seventeenth, 8,000 on the twentieth, 16,300 on the twenty-eighth, 8,100 on the thirtieth, 8,700 on the thirty-eighth and 8,000 on the fifty-eighth day of the disease. The differential eount was, p.m.n. 61, lymphoeytes 35, transitionals 3, basophiles 0, eosinophiles 0, on the seventeenth day of disease, and 67, 25, 6, 0 and 2 respeetively on the twenty-seventh day. The Widal was negative on the thirtieth day.

The agglutination to *B. tularense* was positive in dilution of 1:10 on the twenty-seeond day of the disease and in all dilutions up to 1:640 on the thirtieth day.

While in the hospital the patient was very weak, at times irrational. He was so siek, he looked as if he was going to die. His temperature varied from 97.4 to 102.4, showing no tendeney to afternoon rises. Prostration was extreme. Headache, baekaehe, and tendency to perspire profusely were prominent symptoms. His condition began to improve on the thirtieth day.

Reeovery was gradual, the patient leaving the hospital after being there forty-five days. The glandular enlargement persisted for some time afterward. Two months afterward he still eomplained of laek of strength, although he had gained weight and looked well.

Case 3.—The third case was seen in consultation with Dr. D. E. Seashore of Duluth on Deeember 2, 1926. Mr. O. S., aged 54, Swedish, married, eame to St. Luke's Hospital on November 29, 1926. On about November 10th he had eut his finger while slieing baeon. On November 12th he skinned a snowshoe rabbit whieh had been killed thirty-five miles north of Duluth. On November 15th, while at work, he suddenly beeame very ill with fever and weakness. He staggered and fell while walking home. That night he had a severe headaehe. He was very ill for two or three days and then felt better for two or three days. About ten days after the onset the finger became sore and the glands in the axilla beeame enlarged and tender. Extreme weakness was the most prominent symptom. The most aeute symptoms had subsided before entering the hospital November 29th. While in the hospital he had headaehe, irregular fever varying from 99 to 101.6, pulse from 72 to 84. He felt very weak and exhausted and perspired freely. The uleer on his hand healed very slowly, a thin dirty gray pus in small amounts being removed several times, when healing had practieally closed up the wound. The glands were somewhat tender on the thirtieth day.

Physical examination revealed a punehed out indolent ulcer on the finger with a somewhat elevated hard margin, a floor of neerotie material and discharging upon pressure a thin dirty gray pus, with enlarged and tender epitroehlear and axillary glands whieh did not fluctuate and were diserete and movable. The patient looked very toxic and had the general appearanee of a moderately severe ease of typhoid fever. Smears from the wound on the twentieth day showed staphylococci. On the twenty-third day the urine was normal exeept for a traee of albumin; the Wassermann and

Widal reactions were negative the twentieth day. The agglutination to *B. tularense* was positive in the dilution up to 1:320 on the seventeenth day of the disease.

Recovery was gradual, the patient leaving the hospital after being there sixteen days. Six weeks after leaving the hospital the axillary glands softened and spontaneously ruptured, liberating a copious amount of thin gray pus. This drained for nearly a month, after which the glands disappeared. Marked weakness persisted, so much so that he was unable to go to work until July 1st, seven and one-half months after the onset of the disease, and it was nearly nine months before he had entirely regained his strength.

Case 4.—The fourth case was Dr. Bardon's, who has kindly permitted me to include the case in this study. Mr. V. B., a Finn, aged 53, worked on a fox farm. On July 26, 1927, he became acutely ill with fever, chills, general malaise, nausea, and vomiting. He entered the hospital in a neighboring town on July 28th, at which time he was cyanotic and very ill. His temperature at that time was 101.4, the urine showed a trace of albumin and a few casts. A few dry râles were found throughout the lungs. A slight systolic murmur was present at the heart apex. The picture resembled typhoid fever but a Widal was negative. The following day his temperature dropped to 99.6 and he was lethargic. The albumin in urine was markedly increased. The lungs still were full of coarse dry râles. That night he became markedly delirious. On the fifth day of the disease he was somewhat brighter and was taken from the hospital. He was brought to St. Mary's Hospital, Duluth, on August 4th, severely ill, irrational and unable to give any history.

Physical examination showed a man, aged 53, apparently in a state of extreme prostration, breathing 40 times a minute, with a pulse of 104 and a temperature of 104.4 and blood pressure of 108/68. There were a few scattered pustules on the chest, arms and abdomen. No rose spots were seen. The eyes and conjunctiva were normal. Nose and throat also were normal. The teeth were in poor condtion. No adenopathy was present in the neck. Some impaired resonance and râles were present over the entire left chest. A to and fro rub was heard in the left axilla which extended around anteriorly. Breath sounds were not greatly changed. The right lung apex was slightly dull posteriorly. There was a markedly accentuated pulmonic second sound heard in the fifth interspace, 11 cm. from the midline. A long blowing systolic murmur was present over the entire precordium and in the left axilla. The right heart border was out 5 cm. from the midline. The liver margin was down three fingers' breadth below the costal margin, but was not tender. The spleen was not palpable. The extremities were normal except for a small ulcer on the skin of the middle finger of the left hand with a small amount of cloudy purulent exudate and a much enlarged epitrochlear lymph gland on the same arm.

On August 6th the Widal was negative. The blood showed urea 10 mgm., creatinin 1.5 mgm. The urine was normal except for the presence of two plus aubumen. The leukocyte counts were 17,200 (Aug. 3rd), 16,000 (Aug. 5th), 11,800 (Aug. 6th), 17,800 (Aug. 7th). The hemoglobin was 80 per cent. The differential count showed p.m.n. 88, lymphocytes 11, transitionals 1, basophiles 0, and eosinophiles 0 per cent.

In the differential diagnosis tularemia, encephalitis, meningitis, heat stroke and broncho-pneumonia were considered. Blood was sent to the Minnesota State Board of Health Laboratory for an agglutination test, coming back positive in the dilution of 1:160 and partial agglutination at 1:320.

The patient's condition grew rapidly worse until he died on the fifth day in the hospital and the fourteenth day of his illness.

A post-mortem examination was made by Dr. Berdez, Pathologist of St. Mary's Hospital, Duluth. The outstanding pathological findings were the ulcer on the finger, the enlarged epitrochlear gland, the spleen twice as large as normal, and small areas of necrosis in the kidneys, liver and retroperitoneal glands. There was also a massive bilateral broncho-pneumonia. Dr. Berdez will present his findings along with specimens in his discussion.

The most interesting features of these cases are:

1. That all the patients had handled rabbits.
2. That they all had the characteristic ulcero-glandular syndrome in a relatively mild degree, in some cases so mild that they could have been considered a mere coincidence.
3. That they all had severe general symptoms similar to those of typhoid fever.
4. That they might be classified as a typhoid-ulcer-glandular type.
5. That two of these patients had a pustular rash and these same patients died.
6. That the leukocyte count in all of the patients was relatively low.
7. That the pulse-temperature ratio tended to be low.
8. That the temperature was high, sustained with no remissions.
9. That nothing in the way of treatment apparently changed the course of the disease.
10. That two of the patients died and the other two were ill for four and seven and a half months respectively.

Therapy up to the present is entirely symptomatic. Quinine, arsenic and salvarsen have been used but as yet nothing has proven of value.

It occurs to the writer that the logical treatment is serological, either the use of blood from a patient who has recovered or the development of a serum in some moderately resistant animal. There is a marked production of agglutinin very specific for this particular organism, and agglu-

tinin can be found in the blood of patients years after having had the disease. Ohara states that one attack seems to render the subject immune. With these facts in mind and with the rapid spread of this very serious disease, efforts to produce a protective and curative serum deserve immediate attention.

In studying the bacteriology of tularemia it also occurs to the writer that there is a striking similarity in the morphology, pathogenicity and the characteristic transmission from lower animals to man, directly or through the medium of parasites between *B. tularense* and *B. pestis* of the plague, *B. abortus* of contagious abortion, and *B. melitensis* of malta fever. There is cross agglutination between the latter two. We speak of the well-known typhoid-paratyphoid-colon group of bacilli. This group may well be called the tularense-pestis-abortus-melitensis group. Possibly others will be discovered.

CONCLUSIONS

1. Tularemia exists in rabbits over a large area of Minnesota and contact with rabbits in the laboratory or elsewhere is a source of grave danger.

2. The possibility of such an infection should be considered in all cases having similar symptoms.

3. More attention should be paid in the future in this part of the country to the group of diseases characterized by their ready transmission from animal to man.

4. The characteristic primary lesion should not be ignored even though it is apparently insignificant in comparison with the severity of the systemic disease.

5. Some new form of treatment must be found and effort should be made to develop a specific serum or vaccine.

The writer wishes to acknowledge his indebtedness to Dr. Lloyd Rutledge, Dr. Seashore, Drs. Ekman, Bardon and Hirschboeck and Dr. Berdez for their most kind coöperation. We are all most deeply indebted to Dr. Francis of Washington, D. C.

DISCUSSION

Dr. G. L. Berdez (Duluth): We are all indebted to Dr. Merriman for bringing to our attention, in the report of his early case, the clinical entity of tularemia and its incidence in man, arising from the disease in rabbits. Therefore, the autopsy case, a Finn, working on a fox farm and feeding rabbits to his foxes, might easily have escaped our attention in the circumstances of the great rarity of the disease, had the previous discussion not stimulated our clinicians to look for it.

Up to now, only three autopsies of cases of tularemia in man have been reported, which have been performed 23 days, 24 days and about three months after the onset of the disease; in our case, the autopsy was performed seven hours after death, and about eleven days after the onset of the disease. This case is therefore of special interest for the study of the early pathology in man.

Up to August, 1926, about 300 cases of tularemia have been recorded, with eight fatalities; the death rate is somewhat below 3 per cent. In the autopsy cases, complications such as heart disease, lung involvement and others have had a bearing upon the fatal outcome of the disease, which, while quite serious and often incapacitating over several months, leads to recovery as a rule.

Our case, a man aged fifty-three years, showed at autopsy a very marked aortic stenosis; he had old pleuritic adhesions, a sclerotic focus of the left apex, a large chronic ulcer of the stomach; he showed also extensive broncho-pneumonic changes in both lungs, which, there is no doubt, were induced to some extent by the heart condition.

The changes typical of tularemia were found in the form of numerous whitish nodules in the spleen, the liver, the lungs, the mesenteric and retroperitoneal glands, and, less numerous and smaller, in the kidneys. These nodules measured up to 0.5 cm. in diameter in the spleen, the liver, and the lungs, but most of them were much smaller. They were more white and more irregular in size than the tubercles in a case of acute miliary tuberculosis, their distribution being different, their limits more clear cut.

Tubercles caused by the tubercle bacillus, which are hardly visible, require eight days to develop, under experimental conditions.

Tularemic nodules are numerous and very plain in the spleen of mice, which die usually three to four days after infection.

In our case, after a duration of eleven days, nodules up to 0.5 cm. in diameter developed; the rapidity alone of this phenomenon would have been sufficient to question very seriously the eventuality of these nodules being tuberculous.

Besides these changes, the mucosa of the fundus of the stomach showed numerous yellowish slightly raised spots measuring up to 0.5 cm. in diameter, the Payer's patches and the solitary follicles of the intestines were swollen, congested. The retroperitoneal and mesenteric glands were swollen, congested and, on cut surface, showed very plainly well delimited small white nodules. The thyroid, the pancreas, the adrenals, the musculature of the diaphragm and of the psoas showed no typical lesions. The striated musculature of the extremities has not been examined.

Unfortunately, we were not allowed to examine the bone marrow and the nervous system, in which, according to suggestions made by Francis in one of his papers, lesions are to be expected.

We have made a microscopical examination of sev-

eral organs, and would like to show a few typical slides to illustrate our description.

The nodules of the spleen are formed by areas of necrosis in which a few p.m.n. leukocytes and chromatin detritus can be recognized. The tissue around the nodules is quite extremely congested, the pulpa cells are often loaded with several phagocytized r.b.cs. and occasional p.m.ns. The surface of the spleen shows sometimes a thin fibrinous exudate over nodules involving the capsule of the spleen.

In the liver, there are numerous smaller and larger areas of necrosis; in the smaller areas, the contour of the liver cells can still be recognized in places, while in the larger nodules, these contours are obscured by a marked cellular infiltration. In some nodules, the infiltrating cells are mainly p.m.n., while in other nodules, mainly the larger ones, the cellular infiltration which is very dense in the peripheral parts of the nodules is made up mainly by lymphocytic cells. Where nodules involve the capsule of the liver, there is sometimes a slight depression of the surface of the liver and a thin layer of a fibrinous leukocytic exudate.

The nodules of the lung involve several alveoli, of which the contours can still be recognized by their necrotic septa; these nodules resemble very much small areas of caseation; however, a few p.m.ns., debris of exudate cells and sometimes rests of fibrinous structures can still be recognized in some of these nodules. The nodules near the pleura involve the pleura, which becomes infiltrated and avascular, sometimes necrotic. The lung tissue around the nodules shows an exudate in which numerous desquamated alveolar epithelial cells and r.b.cs. are seen.

In the kidney, besides cloudy swelling of the epithelial cells of the first tubuli contorti, perivascular infiltration is seen along small veins belonging to the system of the venæ stellatæ; this infiltration is made up mainly of lymphocytic cells.

In none of these organs (the spleen, liver, lung, kidney) could we find giant cells of the Langhans type, as they have been described in other cases of human tularemia. Small blood vessels and capillaries showed occasionally swelling and proliferation of their lining endothelium, as has been described in similar cases, and which has certainly much to do with the necrotic and progressive character of the typical lesions.

We could not demonstrate the causative organism in our sections; it has not been demonstrated in human tissues up to now; its presence in human tissues is proved by animal inoculation followed by cultures from the infected animal.

We have made a thorough search for acid-fast organisms, especially in the nodules of the lung, but did not find any. The exudate of the alveoli contained gram-positive diplococci and a few chains of streptococci, which were probably secondary invaders in an organism weakened and partly deprived of its natural defenses. These secondary invaders were not found in the white nodules, but in the areas showing the picture of broncho-pneumonia.

The thyroid, the pancreas, the musculature of the diaphragm, the stomach, the small intestine and retroperitoneal lymph nodes have been examined microscopically, and, in our sections, we failed to find changes related in a definite way to the specific tularemia infection.

The anamnesis, the clinical course, the result of the agglutination test, together with these unusual autopsy findings, were sufficient to consider the diagnosis of tularemia established on a firm basis.

It is interesting to note again, in connection with the study of this disease which recalls so much tuberculosis in its morphological manifestations, that the pathologist needs all available information to guide him in his work, because purely morphological considerations are not always sufficient to lead to final and well established conclusions.

MONUMENTS OF NEGLECT: CROSS-EYED CHILDREN, GROWN UP

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NOT elsewhere in medicine is the proverbial expression "errors of omission" so justly applied as in the responsibility for "cross-eyed children, grown up," for in no other condition that lies within our power to benefit are there such favorable prospects for prevention and relief as there are in squint in children if properly handled during their earliest years.

That we are playing for big stakes should be firmly fixed in our minds, for squint in children brings not only grief to parents, unhappiness to the child, and humiliating self-consciousness to the youth, but also a most positive and heavy handicap to the adult, socially and vocationally.

Happily, it is no longer common experience to hear, from parents, of advice to do nothing about the matter until the child reaches twelve or thirteen years of age, and then seek surgery; but, unfortunately, we do still continue to hear of advice given them to wait until the child reaches six or seven years of age before consulting the oculist.

In view of the general, if not specific, knowledge required of graduates during the past decade and, too, the wide distribution of high-class medical literature, all of which at intervals has contained articles of modern, universally accepted thought on this subject, it is difficult to understand the rather prevailing idea that the age of six or seven years should be awaited before steps for the relief of squint be instituted, unless it is that many men harbor the thought that glasses can not safely be given to children before that age.

It is unfortunate that such an idea should be so widely held for, in fact, with the modern, well-guarded frames, children of one year of age are perfectly safe with glasses, and take most kindly and readily to them. And it is at this very early age that the most startling and almost miraculous results in relieving squint so frequently take place. At this age, indeed, it may be only a matter of weeks or even days in getting the desired result, where a few years later it may mean many months or years and perhaps surgery in addition.

When Claude Worth, of London, one of the outstanding authorities in this branch of ophthalmology, advocated several years ago retinoscopy, refraction and correcting glasses for infants with squint, even the ophthalmological world regarded him as an unreasonable enthusiast, but time has vindicated his judgment, and today we know he was right, unqualifiedly, and that the younger the child is the better and quicker are the results obtained.

To the average person, getting the eyes straight seems to be the whole problem in hand, when in fact it is not the problem at all but only the result, which comes of itself when the necessary and essential provisions are met for its coming. These essential provisions are:

1. Preservation of visual acuity in the turning eye, which begins to be lost the moment the eye turns.
2. The development of fusion of the images from the retinæ of the two eyes into one image in the brain, which results in binocular single vision; and
3. The relief of over-stimulation of convergence, a result of excessive accommodation.

The fact of the matter is that in the presence of full visual acuity and good fusion the eyes will overcome most difficult obstacles, including anatomical deformities, to align themselves properly.

It is, therefore, easily understood why the deviating eye must be rescued at the earliest age from the deterioration of disuse and also from the lapse of fusion function during the age in which its development is to take place or be irretrievably lost. Worth tells us that the fusion tendency begins rapidly to recede after the sixth year if it is not firmly established at that age, and we know that the brain soon suppresses the unfused image of the squinting eye shortly after its deviation.

Furthermore, it should be firmly borne in mind that eyes that straighten without surgery through

the help of retinoscopy, accurate refraction and proper lenses, will remain straight, while, on the other hand, eyes that are straightened by surgery, but which have neither fair acuity of vision nor fusion to hold them in fixation, are not likely to remain straight, regardless of how accurately the surgical correction has been done.

In the greater portion of squint cases in children, crossed eyes, or convergent squint, is the deformity with which we have to deal, and this is almost wholly the result of a discrepancy or inequality in the required accommodation (or focusing effort) and the convergence. An infant's eye is a short (far-sighted) eye, requiring much accommodation effort to focus on near objects, and the accommodation effort relatively is far in excess of the associated convergence needed in later years, a relation which is constant and uniform and almost impossible of dissociation, as companion functions, in mature eyes. The excessive accommodation leads to over-convergence in the infant before the fusion function is sufficiently developed to check it by firm binocular fixation, and the squint develops as a result.

To begin with, let us consider the behavior of but one eye alone, singly and independent of its mate. Visual fixation upon an object is necessary to hold an eye in any given position, and requires at least fair acuity of vision in the eye for its accomplishment. If fair acuity of vision can be raised to a high degree of acuity in the eye by the proper lens, the fixation will be further strengthened and more dependable.

If, then, both eyes be given full acuity of vision and become capable of firm and dependable fixation, and, in addition, the fusion faculty is also present to fuse the images of the two eyes into one image in the brain, binocular single vision with perfect alignment of the eyes will result, and will remain so if the over-stimulation of convergence is checked through the relief of excessive accommodation effort.

To the laity and, in fact, to almost everyone not familiar with the accuracy of retinoscopy, the determination of lenses of proper strength to suit the refractive needs of a little child would seem an uncertain task. It is, however, not at all uncertain, for most infants will fix their gaze upon a light even longer than older children, and the neutralization of shadows by lenses of known strength quickly gives the operator the necessary information to correct the refractive errors present after cycloplegic relaxation with atropin.

The skilled optician, filling the prescription, completes the requirements with safe and appropriate spectacles, which practically are always accepted and well borne by the child. Occasionally a silk tape attached to the temple pieces must be used and tied behind the child's head, but in my experience has seldom been required. The result in many cases is startling and almost unbelievable, to the joy of all concerned.

It is not an infrequent occurrence to have the eyes straighten in a week or two or even in a few days, which means that you have won, and that all that will be necessary will be to secure time for the firm development of fusion during the formative period of the child's life.

Of course, a careful examination of the baby's eyes must be made to exclude congenital malformations and defects that would preclude possibilities of normal visual functions. Congenital cataract, optic nerve and retinal defects, as well as prenatal intra-bulbar disease, are to be watched for in determining the prognosis of any case.

The fusion faculty, it should be clearly kept in mind, is purely a psychic process, and even though (quoting Worth) "the images formed in the two eyes differ in shape, size or position, if the disparity be not too great, the oculomotor apparatus will place the eyes in the most favorable relative positions; and the fusion sense, by virtue of its elasticity, then fills the gap which may remain."

Experiments with the stereoscope show this to be true, and Verhoff's experiments, especially, show how the fusion sense is capable of blending divergent oblique lines into the vertical, omitting any influence upon portions of his test objects which are seen only by one eye. Worth, by his amblyoscope, shows also where, by suggestion, the psychic function of fusion can move altogether different objects into the same field; whereas, before such suggestion they remained separate and apart in different fields in the stereoscope.

Up to comparatively recent times eyes out of line (squint) were considered to be entirely so as a result of unequal length or strength of the extrinsic eye muscles, or as a result of antomical irregularities. While there are still occasional

theories along this line of thought put forward, and such conditions do add to the difficulty later, the generally accepted causes of squint are those enumerated above, and the efforts of ophthalmologists working along this line have been rewarded as never before.

Full consideration of the subject of squint, or strabismus, in its entirety is far beyond the attempt of this paper, and only the usual concomitant squint met with in children is meant to be included.

Paralytic squint, as a result of birth injuries, subsequent trauma, intracranial or orbital tumors, constitutional disease, the toxins of infectious diseases and focal infections, while constantly to be kept in mind in connection with this subject, is entirely outside the application of procedures discussed here.

Surgery, too, has its very important place in squint, and should be promptly resorted to when it is unmistakably evident that the fusion sense present or developing is not capable of bridging the gap. In such cases, after the eyes are closely aligned by surgery, frequently a weak fusion sense begins to take up its function. Modified tenotomies and muscle tucking have, further, gone far to eliminate the uncertainties and risk of over-correction.

But, regardless of what form or kind or condition of squint is to be dealt with, a careful ophthalmological examination, with accurate refraction by retinoscopy under cycloplegic, should be the first and foundation work upon which to determine our entire handling of the case.

If every practicing physician and graduate nurse would feel his individual responsibility in directing and advising, insistently, the parents of "cross-eyed" infants to seek immediate relief at the hands of competent ophthalmologists, the economic fortune to humanity would be incalculable, not to mention the happiness of parents and grown-up subjects. And who knows but that we may have a possible future Oliver Cromwell or Florence Nightingale standing before us, whose fate may be in our hands, and at the parting of the ways, and approaching the fork in the road of life, either to develop into a leader of his fellows or to be stunted by the development of an inferiority complex within him?

The reward of diligence is too great and the price of effort too small in this matter for us to miss endeavoring to relieve a single case of squint that comes before us.

PERUNA—ANCIENT AND MODERN

The Eighteenth Amendment gave a great stimulus to one branch of the "patent medicine" industry—that devoted to the exploitation of alcoholics sold under the guise of home remedies. Originally containing about 27 per cent of alcohol and very little else, the use of Peruna as a beverage in those parts of the country that were at that time nominally "dry" was notorious. Cases of acute and chronic alcoholism, and even, in some cases, of death from its use are matters of record. In 1905 the sale of Peruna to Indians was prohibited. In the same year the Bureau of Internal Revenue classed Peruna as an alcoholic compound advertised and sold as a medicine, but without the addition of drugs in sufficient quantity to change materially the character of the alcoholic liquor. Then the formula of Peruna was changed and sufficient senna added to satisfy the Internal Revenue Department that Peruna could no longer be used for beverage purposes. At that time the alcohol content was cut down from 27 per cent to 20 per cent. When national prohibition was enacted, the alcohol content of Peruna was further reduced to 12 per cent. Now, within the past few months, another change has taken place. The manufacturers have *added* 6 per cent alcohol and have taken out the senna! They have also taken out golden seal, which for some years has been one of the alleged ingredients; on the other hand they have added wild cherry, gentian and potassium iodide. The theory under which alcoholic "patent medicines" are supposed to be tolerated by the Internal Revenue Departments is that they shall contain the minimal amount of alcohol possible. Just why the manufacturers of a nostrum with a history behind it such as Peruna should have been permitted to increase the alcohol content of their preparation 33 per cent is another of those mysteries that only government bureaus can explain. (Jour. A. M. A., October 22, 1927, p. 1444.)

VALUE OF REFRACTION IN CHILDREN*

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THE object of this paper is to emphasize the the necessity for the early care of eyes of children. With the increasing work of the school clinics the eyes of children of school age are usually watched; but no thought is given to the fact that children of the pre-school age may also have serious defects of vision. This is more important from the fact that it is during these earliest years of life that the best permanent results may be secured. Only too frequently have I been called upon to treat eye defects that are beyond repair and which could have been easily restored to normal if seen and cared for in early life. It has also been found that many other conditions not ordinarily associated with eye defects may really be due to visual errors. This fact is well illustrated in several cases in the series I am reporting.

To bring the matter to a more definite basis 100 consecutive cases have been selected whose ages range from nine months to seven years. Of this group fifty-six had a slight or moderate error of refraction and the remaining forty-four had a high degree of error.

The refractive conditions making up the second group were of such a character that if they were not cared for early in life permanent damage would result. For this reason it is this group that I wish to particularly emphasize. These cases may be subdivided for the sake of simplicity into the following:

1. Hyperopia with or without astigmatism.
2. Myopia with or without astigmatism.
3. Astigmatism.
4. Anisometropia.
5. Opacities of the media.

Hyperopia is the most frequent error and there were 21 cases of this condition or approximately 47 per cent of all cases in this group. High degrees of hyperopia are hereditary and are practically always present at birth. A condition of this type demands early attention if the visual acuity is to develop normally. To allow the error to go uncorrected during the period of development of the visual acuity will result in an eye which does not have normal vision. This means that in adult life the eye can never be corrected to full vision. No matter though the error be corrected by glasses the person will never be able to read the 20/20 line. Since the period of development of visual acuity is from birth to the sixth year, early correction is desirable. If necessary, glasses may be worn by babies as young as nine months.

As has been stated, early correction may prevent the development of or give relief from other conditions, some directly related to the eyes and others not suggestive of them. Some of the various conditions noted are nervous irritability, epileptiform convulsions, melancholia, neurasthenia, tachycardia, night terrors, indigestion, constipation, dizziness, chronic lid irritation, lateral curvature of the spine, pain in the nape of the neck and other portions of the body.

Four of the cases were mongolian idiots and these were greatly improved in their mental reaction. Two were albinos with marked errors. They were markedly benefited by correction of their error of refraction and use of tinted lenses.

Convergent strabismus is a frequent complication of high hyperopic error and was present in twelve of the twenty-one cases. This condition usually appears at the age of three but the onset may be before the first year. It is due to the excessive effort of accommodation which is made to overcome the hyperopia. It is very important that convergent strabismus receive early care because the vision of the squinting eye does not develop. This is because of a relative disuse and if not corrected before the sixth year a permanent loss of vision results, the eye becoming practically useless. The result is a patient who is cross-eyed and who has but one useful eye. Even if operated he does not have binocular vision or depth of perception and is usually backward and sensitive. By early care all of this may be avoided. Simple correction with proper glasses will cause the eyes to be parallel, normal binocular vision, normal mental development and the avoidance of an operation.

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Myopia is the second most frequent error and was present in eight cases. An hereditary factor plays an important rôle, although this condition is seldom seen at birth. The onset is usually in the early years of life. Its rate of development depends to a great extent upon whether the eyes are used excessively for close work and whether or not they are relieved of strain by proper correction. Any child who has a family history of myopia should have its eyes examined. If any myopic tendency is present, close work should be limited and the refractive error corrected. Under this regime the progress of the myopia is frequently checked, the eye develops normal visual acuity, the ciliary muscle develops normally, a divergent squint often is prevented and mental development is normal. If neglected, fundus changes are not uncommon and the sight in the eye may eventually be lost.

Astigmatism alone was present in five cases. This condition is usually present at birth and may progress if not corrected early. In high degrees, early care is essential, as it will at least prevent an increase in amount and will allow the eye to develop normal vision; squint will not develop, symptoms of eye strain will be eliminated and the child will develop normally mentally.

Anisometropia was found in three cases where one eye was hyperopic and the other myopic. If not corrected early, one eye is neglected and does not develop, leaving the patient with but one useful eye. If corrected, both eyes develop normally.

Opacity of the media was present in seven of the cases on this series. Three of these were cataracts, two being traumatic and one congenital. If the condition does not involve the entire lens an attempt should be made to bring the vision up with glasses. If not successful an operative procedure should be employed and a glass given to bring out the vision. This will give the eye an opportunity to develop normal visual acuity which it cannot do if the cataract is allowed to go uncared for.

There were four cases of corneal opacities which were classified as interstitial keratitis, trachoma, old ulcer and traumatic. The vision in this type of eye is usually poor but it can be greatly improved and the development of the eye aided.

While not including all conditions which may be encountered, the cases listed give some idea as to the frequency and types of conditions found in young children. The age of the child is no excuse for neglecting the eyes. An accurate examination can be made on a child of any age. If too young to coöperate, the glass is ordered from the retinoscopic reading taken under ether anesthesia. Atropine is absolutely essential in the examination of all children because without it the eye is not relaxed and it is impossible to bring out the true error. If one child in a family shows a refractive error, the remainder of the children should be examined, as not infrequently the same type of error is present in all members.

In closing I wish to urge more frequent refraction in young children. Too frequently symptoms of eye strain are looked upon as indications of some other conditions and treatment given accordingly. If no trouble is found the examination has at least done no harm and the eyes have been eliminated as a cause of the trouble. Early care of refractive errors is the greatest step towards the conservation of vision. Attention to this important procedure will enable many children to grow into normal adult life who, in the past, have been allowed to struggle along as best they might.

ARC EPILEPSY REMEDY

The medical profession has recently been widely circularized by the American Remedies Company of Rockford, Ill. The medical profession is asked to use the firm's "Reliable Remedy for Epilepsy" and is told by the firm that it does not "feel justified" in exposing its formula—that is, the medical profession is asked to prescribe a preparation of secret composition. The A. M. A. Chemical Laboratory analyzed the ARC Epilepsy Remedy and found it to consist of capsules, each containing about 1½ grains of phenobarbital (luminal) and a considerable amount of a laxative (emodin-bearing) drug and a small amount of dye. Is it possible that there are physicians who are so gullible and forgetful of their duty to their patients that they will give a dangerous drug in unknown dosage? A physician who uses or prescribes "ARC Epilepsy Remedy," giving so dangerous a drug as phenobarbital in unknown dosage, may lay himself open to a charge of doubtful practice. (Jour. A. M. A., October 1, 1927 p. 1167.)

DIAGNOSIS AND TREATMENT OF NON-OPAQUE FOREIGN BODIES IN THE AIR PASSAGES*

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A NON-OPAQUE foreign body may be defined as one that does not cast a shadow on an *x*-ray film. I have included small bones in this group because they may or may not cast a shadow, depending upon where they are lodged. In the air passages, they cast no shadow, but they may in the esophagus.[1]

Non-opaque foreign bodies are met in the air passages with greater frequency than opaque ones; in fact, seventy per cent are non-opaque. This is not true in the esophagus in that forty-five per cent of the foreign bodies lodged there are non-opaque as against fifty-five per cent of the opaque variety. These facts are easily understood when we stop to think that the smaller foreign bodies pass readily through the esophagus because of its size, whereas the larger ones are more likely to become lodged there; the small foreign body is usually some article of food, whereas the larger one is more often an object such as a coin, a safety pin or a large bone.

Foreign bodies find their way into the air passages of infants and children much more frequently than into those of adults. This is probably due to the child's lack of proper coördination during the complex action of swallowing, the larynx not being closed at the proper time. Also, the larynx is much higher in children and infants than it is in adults. Carelessness of the mother or nurse in not watching everything that goes into the mouth of the baby is a prolific cause of foreign bodies being aspirated. Ninety per cent of non-opaque foreign bodies are found in children under two years of age. The younger the infant, the more severe is the reaction likely to be.

The foreign body found most frequently in the air passages of children is the nut, such as peanut, Brazil nut, cocoanut and almond, whereas seeds are a close second, among which may be mentioned the seeds of the watermelon and, also, peas, beans, corn and cherry pits, if they may be properly classified as seeds. It is obvious that such a condition could be easily avoided in the case of infants of two years of age and younger because nuts, seeds and such things are not proper articles of diet for infants. Yet, it is surprising how many cases there are of infants choking on some of these things that have been fed to them by injudicious parents. One of my patients, a baby only one year of age, had a piece of nut lodged in his bronchus by a parent—whether mother or father—feeding him chow mein.

Much care must be taken by the medical man in obtaining a comprehensive and accurate history in cases such as these. When a mother reports that her infant has met with such an accident, she is very frequently correct in her diagnosis of the case. It is natural for many medical men to attempt to allay the fears of the anxious mother by assuring her that there is nothing the matter with the baby, but the physician should take pains to make no such assurance until he has made a complete and thorough examination which should be supplemented with the *x*-ray. Deductive conclusions are dangerous. On the other hand, it takes a first class and thoroughly experienced clinician to diagnose a foreign body when the history is negative. Pneumonia or laryngeal diphtheria are more likely to be thought of first before considering a foreign body as a possibility. As an illustration of the truth of this statement, I will cite the instance of one of my patients to whom was administered 60,000 units of diphtheria antitoxin by four different physicians before a diagnosis of foreign body was made.

Clinical features brought about by non-opaque foreign bodies in the air passages are very much more striking and are quite different from those caused by opaque foreign bodies. The outstanding feature is the violence of the reaction. This reaction is not caused by the peanut alone, as was formerly thought, but it, being the most common, is usually considered the most dangerous. Any organic foreign body *may* produce as violent a reaction as the peanut. I am borne out in this

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by a number of standard authorities.[2, 3, 4] One of them bases his opinion upon an analysis of 505 cases.

Vegetable organic foreign bodies may produce immediately a violent tracheo-bronchitis, both proximal and distal to the foreign body, in which trauma, edema, congestion, exudation (membranous at times), and spasm all play a part. The child is toxic with a high fever and a violent cough. Such a reaction as this comes as a result of the presence of a non-opaque foreign body, whereas one would not meet it very often in cases where the intruder is opaque, such as a nail, a safety pin or other metallic object. When an opaque foreign body is removed, the patient usually is relieved immediately, but this is not true in cases of the non-opaque body, as the reaction is usually so violent that a reasonable length of time must elapse before it subsides and the patient gets relief. In fact, the post-bronchoscopic care of the patient is often as important as the bronchoscopy itself. Eight of my thirty-one cases of non-opaque foreign bodies required intubation after the removal of the objects and a tracheotomy was necessary in two others. Neither intubation nor tracheotomy was found necessary in any of my metallic or opaque foreign body cases.

The first symptoms of foreign body in the air passages are choking, gagging, coughing, wheezing, cyanosis, vomiting, prostration and dyspnea and in rare instances death ensues immediately. When an infant chokes, is cyanotic and wheezes persistently, a bronchoscopy is imperative, regardless of other symptoms or findings.

As the foreign body passes down the air passage, other symptoms make their appearance with reference to the location of the foreign object. If it is in the larynx, hoarseness, croupy cough, aphonia or dyspnea with substernal retraction may be present and a laryngoscopy should be performed to make the diagnosis. A laryngoscopy will rule out trauma from digital or instrumental efforts at removal of a foreign body and it will also rule out whooping cough, croup, laryngeal diphtheria, laryngitis, laryngismus stridulus, thyroid or thymus enlargement, papillomata, congenital stridor, laryngospasm from spasmophilia, overflow from obstruction of the esophagus from a congenital atresia or foreign body, or esophagotracheal fistula.

Should the foreign body be lodged in the trachea, the patient may have sudden cyanosis and coughing when the foreign body bounces against the vocal cords. When it finds its way into a bronchus, there is a period of quiescence which may be quite confusing to the medical attendant. As the object moves around and is forced suddenly against the vocal cords, there is heard distinctly a slapping noise which is quite pathognomonic of a tracheal foreign body. This same noise is accompanied by a thud that may be distinctly palpated. As Jackson[5] has it, "the audible slap and palpatory thud."

When the foreign body lodges in one bronchus, breathing may be quiet and regular through the unobstructed bronchus. Wheezing is a very ordinary and common symptom of bronchial foreign body; at times the mother is able to feel the wheeze with her hand and to locate the side upon which the obstruction lies.

"In many cases, there is a peculiar variety of restlessness accompanied by a facial expression of anxiety. The baby would seem to be sleepy, but he does not dare to close his eyes for fear his breathing will cease. It is only necessary to glance at a child in such a condition to realize that it is very seriously ill.[6]" In other children, there may be an obstruction to a part of the lung, where there is no dyspnea, except on exertion, and apparently there is nothing wrong. As Manges says: "There is no other condition so grave and serious as this where the symptoms may appear to be so slight or to vary to such a degree."

Physical signs are not necessarily constant, as they vary materially at different times depending upon the shifting and changes in location of the foreign body and of the secretions resulting from its presence. The most constant and valuable signs are: (1) bronchial obstruction, as shown by diminished intensity of the breath sounds distal to the foreign body; (2) impaired expansion on the obstructed side, which sign can be noticed when the intruder is of very minute proportions, in which case it is the most valuable of all of the physical findings; (3) fremitus is palpable at times when no other indications are plainly marked. There are other signs that are not of so much value, as, for instance, those obtained by percussion, which depend upon the degree of obstruction in the bronchus. If the obstruction is complete, there will be found one of two

things: either a collapsed lung which will produce tympany for a time or a drowned lung which will occasion diminished breath sounds and absent fremitus and may lead to a diagnosis of empyema. On the other hand, a partial obstruction will bring about an emphysematous lung with varying degrees of tympany. Those signs obtained by auscultation are perhaps of more value then those secured by percussion, although râles

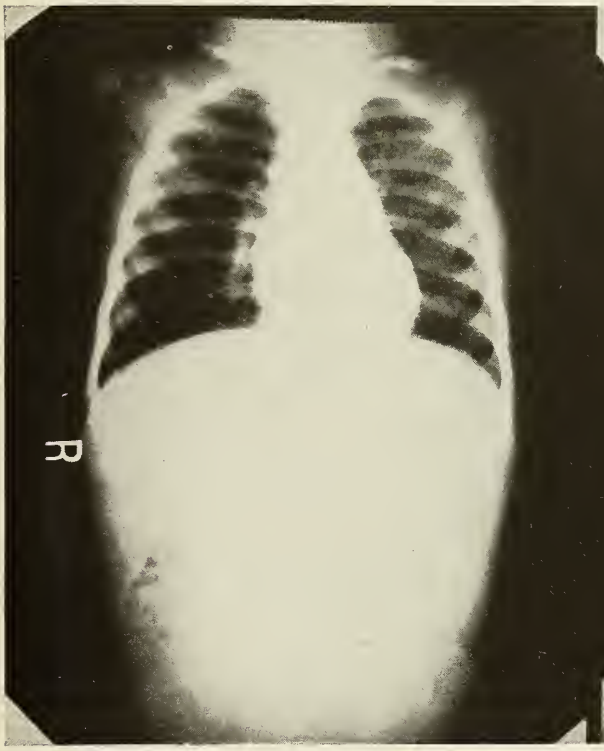

Fig. 1.

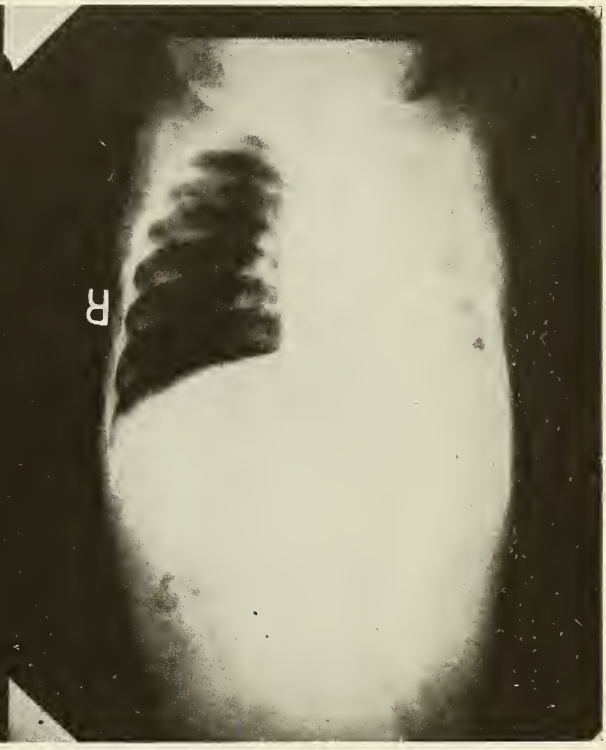

Fig. 2.

Two films taken of a child fifteen months old, who gave a history of choking on a piece of bacon at breakfast (5 hours before the films were made). The mother found a small piece of walnut in the child's mouth at the time of the accident.
Fig. 1. Inspiration: note the slightly better penetration on the right side.
Fig. 2. Expiration: The right side shows much greater penetration than the left. The mediastinal structures and heart are displaced to the left and the right diaphragm is depressed.
Diagnosis: Obstructive emphysema, right, due to a non-opaque foreign body in the right bronchus.
Bronchoscopy: A large piece of walnut removed from the right main bronchus.

are not always heard on the obstructed side when the obstruction is complete, as they may show up on the side that is free from trouble; but when the obstruction is partial, râles are usually found distal to the foreign body.

Professor McCrae, who sees all of Jackson's cases and has therefore had a tremendous experience writes: "There is no one description of physical signs which covers all cases. If the student will remember that complete obstruction of a bronchus leads to a shutting off of this area, there should be little difficulty in understanding the signs present. The diagnosis of empyema may be made, but the outline of the area of dullness, the fact that there is no shifting dullness, and the greater resistance, which is present in empyema, nearly always clears up any difficulty promptly. The absence of the frequent change in the voice sounds, so significant in an early small empyema, is of value. A large empyema should give no difficulty. If difficulty remains, the use of the needle should be sufficient. In thickened pleura, vocal fremitus is not entirely absent and the breath sounds can usually be heard, even if diminished. In case of partial obstruction of a bronchus, it is evident that air will still be present, hence the dullness may be only slight. The presence of air and secretion will probably result in the breath sounds being somewhat harsh and will cause a great variety of râles, principally coarse, and many of them bubbling. Difficulty may be caused by signs in the other lung or in a lobe other than the one affected by the foreign body. If it is remembered that these signs are likely to be only on auscultation and to consist largely in the presence of râles, while the signs in the area supplied by the affected bron-

chus will include them on inspection, palpation and percussion, there should be little difficulty."

The *x*-ray is without doubt our most potent and valuable aid in diagnosis. Although it never does show the non-opaque foreign body, nevertheless it demonstrates the different aëration of the lungs. Manges[6] has perfected this technic to a remarkable degree and his results are now being duplicated throughout the entire habitable globe. The *x*-ray findings depend absolutely upon the type of bronchial obstruction, which may fall in any one of three categories: (1) the bypass valve type, where air passes both in and out; (2) the check valve, in which case air can pass in but cannot be expelled; (3) the stop valve, which prevents air from passing in either direction. The most frequent finding is of the second type where air can go in, but not out, which produces a condition of obstructive emphysema. The *x*-ray evidences of obstructive emphysema are: (1) increased transparency of the affected lung, which is most in evidence at the end of expiration (but it takes a very skillful operator to get a film at the particular instant that the lung is empty of air although it may show up at other times as well); (2) depression and limitation of motion of the diaphragm on the affected side; (3) displacement of the heart and mediastinal structures to the unaffected side at the time of expiration. The displacement of the mediastinal structures is easily observed through the agency of the fluoroscope and to see the heart and other structures move from side to side during respiration is a sight not soon to be forgotten. As I have said, the stop valve is a complete obstruction and results in atelectasis, sometimes called collapse. Under such circumstances, the air is absorbed and the lung shrinks, becoming a solid mass which casts a dense shadown on the *x*-ray plate. The heart becomes displaced toward the affected side, the amount of displacement varying with the size of the lung. In the case of a collapsed lung the air spaces in it may eventually become filled with exudate or pus, in which event the lung may become expanded to its normal size, at the same time being entirely devoid of air. This condition is known as drowned lung. If the infection continues long enough, the drowned lung may develop into a lung abscess.

Manges[6] is of the opinion that small non-opaque foreign bodies are the proximate cause of many lung abscesses. He says: "When there is evidence of an infectious pneumonitis in the distribution of the lower lobes of the bronchi, the inference should be that the lesion is due to aspiration of some foreign material unless there is a very definite history of another cause. In the first place, this is the location where foreign bodies go when they are small enough to get there. In the second place, we know that a chronic infectious pneumonitis or chronic lung abscess is the rule in foreign bodies of long sojourn."

In the case of non-opaque foreign bodies in the trachea, the *x*-ray signs are: (1) increased transparency of both lungs; (2) depression and limited motion of both diaphragms; (3) rotation of the heart in such a way that its transverse diameter is less at expiration than it is at inspiration, which can be determined by measurement if necessary.

There are cases in which these signs are found in combination, as atelectasis and obstructive emphysema in the same lung, in which event the interpretation may be rather difficult, although the diagnosis of a foreign body is usually established.

There are cases when the *x*-ray will localize a foreign body in a particular place, but at the time of operation it may have been dislodged so that it is removed from a different location from that demonstrated by the *x*-ray. This should not be considered an inaccuracy on the part of the *x*-ray, as the probabilities are that it has been disturbed by the insertion of the bronchoscope.

These *x*-ray findings are usually the result of a narrowing of the lumen of the bronchus, but this condition does not always depend upon the presence of a foreign body. There are a number of things that may produce this condition and must be ruled out of the diagnosis of a foreign body, such as: (1) new growths—for example, a polyp of the bronchial mucosa[7]; (2) tuberculous granulation tissue[8]; (3) bronchial diphtheria; (4) mucous plugs as in massive collapse of the lung[9]; (5) compression stenosis of the bronchus as peribronchial glands, aneurysm or mediastinal tumor.

I have had two cases where obstructive emphysema was demonstrated on the *x*-ray film in neither of which was I able to locate a foreign body. In my opinion, the foreign body was there at a recent time, but it was doubtless coughed up

before bronchoscopy. I am sure that the foreign body was not present because both of these children are alive and well at this writing.

The invariable treatment of these cases is bronchoscopic. The removal through the medium of the bronchoscope, while often difficult, can safely be done in the majority of cases by the experienced operator. One might be tempted to let nature do its work, but statistics have demonstrated that under such circumstances the foreign body is coughed up by only two patients out of a hundred, and the other ninety-eight will inevitably develop some serious lung condition that will result in death.

In conclusion I wish to emphasize the fact that:

1. Ninety per cent of the non-opaque foreign body cases occur in children under two years of age.

2. It is usually possible to obtain the history and it is of enormous value.

3. The reaction caused by the foreign body, rather than the foreign body proper, is responsible for most of the symptoms.

4. *X*-ray is exactly as valuable in the diagnosis and localization of non-opaque foreign bodies as it is of the opaque variety.

5. Bronchoscopic treatment, or removal, is the only treatment advisable.

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HEART DISEASE FROM THE INSURANCE STANDPOINT*

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TO CONSIDER this subject fully, one should include all types and manifestations of disorders of the heart and circulation. However, I shall have to confine my remarks principally to the "significance of heart murmurs" and shall refer to these abnormalities as impairments rather than as "diseases of the heart." No attempt will be made to touch upon the various irregularities of the pulse, such as extra systoles, sinus arrhythmia, etc.

Heart murmurs reported in routine insurance examinations have caused great uncertainty and misapprehension as to their bearing upon the insurance risk. They have ranked high among impairments as a reason for rejection, and it was common practice among insurance companies prior to twenty years ago to decline all risks evidencing a heart murmur of any sort. This was because of the belief, now antiquated, that murmurs are always indicative of heart disease.

Because murmurs were heard in valvular heart disease, it was accepted as a fact in insurance medicine that murmurs meant heart disease. Whatever value we at the home office may place upon a reported heart murmur, we must first decide—"Is the murmur functional or is it organic?" and, second, "What effect is it likely to have on the applicant's longevity?" It is a fact borne out by clinical and life insurance experience that some of those suffering from so-called heart disease will succumb to some form of heart disease only too soon, and that others will live out their span of life with normal vigor.

Since the fundamental idea of life insurance is protection of those who would otherwise be dependent, it is the purpose of life insurance companies to desire to issue insurance to everyone to whom it may safely be granted. Unquestionably, in the past, many applicants for insurance have been denied the benefits which life insurance affords, owing to the fact that some examiner in the field has reported a slight mitral murmur heard at the apex, without any other symptoms or signs of heart disturbance; and some of these have continued to live to a ripe old age in spite of the heart murmur. Many similar cases would now be granted some form of protection.

At present, the interpretation of heart murmurs is so confusing as to bewilder not only the clinician and examiner, but, even more so, the medical director who must interpret the examiner's findings and value the risk for insurance in large amounts. I wish to emphasize this statement by citing quotations taken from the literature wherein recognized authorities on heart disease have expressed their opinions.

Sir James McKenzie: "Murmurs may appear in hearts with no damage to the valves. Individuals with functional murmurs may be in perfect health and lead strenuous lives and never show the slightest sign of heart failure. From this we can conclude that murmurs may be physiological and normal even and indicate neither impairment of the heart's efficiency nor foreshadow the oncoming of heart failure."

And further: "Consideration of the functional efficiency of the heart offers, undoubtedly, the best guide in these cases, and we may fairly assume that when the heart is normal in size and its efficiency is not impaired, the murmur is physiological."

Lewis Connor: "I am inclined to believe that one will make the fewest mistakes in the diagnosis of mitral regurgitation by adhering to the rule of never venturing a diagnosis on the presence of a murmur alone, no matter how characteristic it may seem to be, and further, it is believed that full nine-tenths of all apical systolic murmurs belong to the class of accidental or functional murmurs."

Paul White, in a recent monograph, states: "Slight apical systolic murmurs (not transmitted from the base) are common and of themselves of little or no importance, in the absence of other signs of heart trouble. Their mechanism is often obscure."

Dr. G. Buller: "It is safe to say that a primary mitral insufficiency should, in no case, be diagnosed unless in addition to the murmur there is evidence of hypertrophy and preferably a definite history of rheumatism."

Hirschfelder says: "Murmurs of the heart without the presence of valvular lesions are so common that autopsy evidence led Laennec to the erroneous belief that murmurs were of no diagnostic importance whatever," and refers to the fact that "Potian, who has made the most extensive investigations upon the subject, found such murmurs in one-eighth of all the patients seen in his hospital service."

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

Turning now to organic murmurs, Norris says that the French have an axiom, "A disease of the valves is not a disease of the heart," and quotes Sir Andrew Clark to the effect that in the study of 700 cases he found there was often practically no shortening of life and MacKenzie wonders "whether the use of auscultation has not been the means of doing more harm than good." Martin says, "To regard the mere existence of say a mitral murmur, even with a previous rheumatic history, as, per se, a grave omen or a cause of rejection for life insurance seems to blind oneself to the more accurate knowledge acquired from recent investigations."

Cabot says: "Not every murmur which is to be heard over the heart points to disease either in the valves or in the orifices of the heart. Perhaps the majority of all murmurs are thus unassociated with valvular disease."

In his latest book, "Facts on the Heart," Dr. Cabot starts out his first chapter with this bold statement: "The first, and in some ways the most important part of all, is to know that most heart disease is imaginary." "Mitral regurgitation without stenosis was apparently present in seven out of 1,906 necropsies of this series. Three of them were doubtful. It is obviously, therefore, one of the rarest lesions discoverable at post-mortem. During life there are no signs by which it can be recognized. It is not a clinical entity."

"Over 90 per cent of all cases of genuine heart disease fall under one of the three types here called rheumatic, syphilitic, and hypertensive. Most diagnoses of heart disease, whether made by physicians or suspected by the patient, are in my experience wrong. In such cases the heart is usually sound."

"Mitral regurgitation is one of the rarest of valvular lesions and cannot, with any certainty, be recognized in life."

The literature reviewed shows such a marked divergence of opinion that we may be pardoned for some unwillingness to be guided in our selection by the opinions even of such noted investigators as above referred to. We cannot, for very good reasons, immediately adopt each new idea and so-called "advance in medicine," but must be so conservative as to appear unprogressive; new theories developed and exploited even at the hands of *noted* investigators must be carefully weighed, and considerable time must elapse before sufficient experience is acquired to justify us in adopting these measures.

Clinical and post-mortem observations offer us but little help in evaluating the effect of these murmurs on longevity. As a matter of fact, they really tend to minimize their significance, although from our life insurance experience we know full well that these murmurs must not be disregarded. The authorities quoted give us no dependable idea of the nature of the heart disease, if any, which is the underlying cause. Therefore, to discover the effect, we are obliged to fall back upon our own resources gained by experience in this class of cases.

Previous to 1925, the method commonly used in classification of murmurs was based upon the generally accepted diagnosis of an impairment or combination of impairments rather than upon the reporting of the actual physical signs. Formerly, heart murmurs were reported as regurgitation through, or obstruction of, mitral, aortic, bicuspid, and pulmonic valves, as functional murmurs or as plain heart murmurs, without details. Such a classification allowed full play of the personal equation of the differing individual opinions of examiners and medical directors. Beginning with 1925, a classification has been in use which stresses the reporting of physical signs, and it is hoped that by this method a more detailed analysis and comparison of experience may be gained.

Insurance medicine is endeavoring to keep pace with modern medical thought and is willing that clinical medicine point the way. An insurance company is necessarily handicapped by not being able always to secure the services of experts in the field to examine their applicants, nor to avail themselves of the finer instruments of precision such as the *x*-ray, electrocardiogram, etc., for a more intensive examination of the heart conditions of their applicants. Were this not so, it might be possible to make decided changes in our ratings and perhaps to enjoy a better mortality in our heart cases than is now possible. Insurance has to do with the coverage of *average* lives, and, for obvious and practical purposes, these must be examined by physicians of average ability or better. The results obtained are influenced by the interpretation of their findings.

Emerging from this haze of present day "cardiological fog," it may readily be seen that the companies must place a great burden upon their examiners in the field in expecting them to interpret and diagnose properly that type of heart murmur found near the apex; which is localized rather than transmitted; which is constant and exists as a solitary circulatory impairment—the mitral regurgitant murmur. Since there is no unanimity of opinion as to its significance among

life insurance medical directors and apparently the same problem confronts the internist, there are some who will classify all systolic apical murmurs as indicating mitral regurgitation; others will do so only in the presence of apparent hypertrophy, of an accentuated pulmonic second sound, or a murmur so harsh that it is widely transmitted.

The difficulties attending the interpretation of true cardiac conditions are always great, particularly in life insurance, where one or two examinations of an applicant must suffice. The average physician may be an excellent examiner and a man of good judgment, but it is absurd to say that he can elicit or express in definite terms the finer shades of diagnostic signs that enter so greatly into the prognosis of these cases.

With this in mind, companies doing substandard business especially, have devised various types of heart blanks upon which the examiner is expected to report his findings in writing and graphically upon an outline of the chest.

The special heart blank tends to put the examiner on his mettle, and at the same time enables the company to make a fairly accurate estimate of the value of his work. By following the instructions contained in the blank, he will develop information otherwise overlooked in the course of the usual casual examination. It often happens that the company finds it necessary to request a reëxamination of an applicant, on account of a history of some heart impairment or owing to unfavorable information on file at the home office. This request is often resented by the examiner and wrongly considered as an affront or to indicate a lack of confidence on the part of the company. This should not be so, as often murmurs and other impairments, at first overlooked, are elicited in the course of a special heart examination after exercise or by examination in a reclining posture. Many of our tried examiners in the field use this blank automatically in reporting their heart findings in every suspected case, thus obviating delay in disposing of the case and also obviating the necessity of seeing the applicant a second time. The extent of confidence in the examiner plays a large part in ultimately placing the proper value on the risk.

There are several important factors which enter into the consideration of this subject: (a) If a heart murmur is present, what is its nature? (b) the degree of enlargement, if any; (c) the rate and character of the pulse; (d) the blood pressure, both before and after exercise; and having through these factors determined the nature of each case, it is the medical director's duty to determine what mortality is to be expected in a group made up of exactly similar lives, compared with an equal sized group of normal lives.

Routine use, in every insurance examination, of the exercise test and heart blank would be most valuable to insurance companies, but there are many reasons, competitive and otherwise, which make its routine use impracticable. It is, however, a valuable adjunct, easily utilized when occasion warrants. It is easily employed and understood and does not require special training to carry out. It also causes no inconvenience to the applicant. It is our experience that many of our examiners use it routinely where there is any suggestion of cardiac impairment or irregularity.

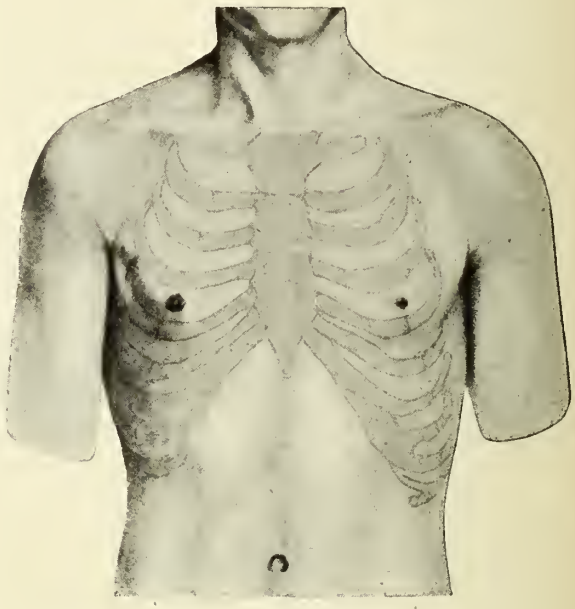

Fig. 1. Heart chart.

Some five years ago Dr. Harold M. Frost of the New England Mutual Life Insurance Company, in an effort to find some way to separate the good cases showing heart impairments from the bad, developed what is known as a cardio-respiratory test. This test applies to the cardio-vascular system a strain which may be measured and controlled, increased or decreased, as the physical condition of the subject may require,

and may be applied under conditions which would not permit of the use of more violent exercise tests. Dr. Frost recently discussed the group of 489 cases of the type of murmur we have referred to above and states that his company has accepted 418 or 85 per cent of this group. The amount of insurance involved is $2,795,812. They have been extremely fortunate in that they have had no deaths in this group.

Whether or not this test will enable us to segregate the good from the poor cases remains to be seen. Some feel that this method has no advantage over the usual "exercise test." Only experience over a long period of time can determine this. Meanwhile we will await with interest a further study of the experience developed in connection with the use of this unique method.

Before the days of "substandard insurance," the disposition of these cases was simple. They were all promptly declined and therefore gave the medical officer little concern, though we now fully realize that a great injustice was done the applicant and his family, and the insurance companies deprived themselves of good insurance risks. The companies were, until twenty years ago, rather secretive about their experiences in different classes of insured lives, and little was known outside of the home office of the company what their actual experience was, in a given class of cases. Of late years, however, the larger companies and particularly those doing the so-called substandard business have contributed an immense amount of information which has been of great benefit to the insurance world, to the medical profession, and, last but not least, to the insuring public. Life insurance statistics in reference to heart murmurs should be, and I believe are, of considerable value to clinical medicine. While it is true that examinations for life insurance are not made with the same degree of skill and employment of modern equipment as in clinical work, nor is so thorough and prolonged a study possible, still those examinations are made by men of at least average ability, and the companies are satisfied with the results obtained, and their experience reflects this confidence. We are sure that painstaking efforts on the part of examiners in an effort to secure more accurate data and complete reports would result in greater efficiency on the part of the examiner and more just action at the home office.

A study of this nature would be incomplete without a reference to the so-called "functional murmurs," murmurs occurring independently of any organic change, whether of the valves, myocardium or arteries, indicating merely disorder of function, no organic lesion being necessarily present. Some writers deny the existence of functional disorders of the heart altogether, being of the opinion that in every case some structural change not only exists but accounts for the malady. Such a view is held to be untenable by most medical directors. In a large percentage of cases, evidence of organic disease has not been detected because the examination has not been sufficiently thorough. It must also be remembered that the applicant's attitude, whether intentional or innocent, is to present the best side of his case to the examiner and to conceal facts which, if given, would often result in the detection of important impairments. Failure to obtain more details of personal history and present condition cannot, we feel, be entirely ascribed to the applicant's attitude, as has been done in the past, but is due, to a large extent, to failure of the examiner to interrogate and examine the applicant properly. This is clearly evidenced by the number of early deaths from heart disease incurred by the companies.

In the absence of any other abnormal finding such as thrill, hypertrophy, unusual pulse, blood pressure beyond normal limits, history of symptoms relative to the circulation, or history of disease predisposing to heart disease such as rheumatism, syphilis, chorea, etc., the assumption of competent valves and healthy myocardium is justified.

The observation of the reaction to muscular work is of value, and the bending exercise or "dips" will determine whether the myocardium is sound. An undue increase in pulse rate and failure to return to normal in three minutes, a drop or unusual elevation of diastolic blood pressure, raises doubt as to the quality of the myocardium and is often as useful in determining the value of a risk as are the more elaborate diagnostic methods. It is, of course, understood that these observations are not positive or unfailing evidence of myocardial disease, yet the test has the advantage of allowing us to separate the better from the poorer risks of such groups.

I would not suggest, however, that persons

with uncomplicated heart murmurs can be safely insured without some provision for an increased mortality. Where thousands of these cases are examined even by experts who give a most favorable prognosis in a given case, we realize that badly impaired hearts will creep into the group, no matter how carefully selected, and such risks will exert their unfavorable influence on the class as a whole. Notwithstanding the published experience of some companies and the very liberal view of the condition taken by eminent clinicians, few companies care to insure individuals with uncomplicated mitral regurgitant murmurs at standard rates.

Mitral stenosis, aortic insufficiency and stenosis give signs, aside from their character, location, and time of murmur, which establish their diagnosis, and they are usually detected and declined. Right sided valvular disease is rare and has little insurance interest. Systolic murmurs at the apex or at the second, third, or fourth left cartilage, at the aortic area, or at the region of the ensiform, comprise a large percentage of the murmurs which we have to consider.

With the advent of better trained and more skilled examiners in the field, some companies felt that they were in a position to obtain more accurate data, and certain companies, notably the New York Life, decided to make some investigations with certain types of these impaired risks. In this study the largest number of cases were those showing mitral regurgitation with and without transmission and with and without hypertrophy. A group of these cases was insured at an advanced premium rate, and after a time the mortality on these lives was computed, and the results published. There were included in these classes cases showing only the impairment noted. If irregular or intermittent pulse were also reported and other cardiac irregularities noted, these cases were not included in the study.

Recently, the Equitable, the Travelers Insurance Company and the New York Life Insurance Company have published the results of their experience, and there is a striking similarity in the experience gained. There were in this study some 20,000 cases, and it should be remembered that these lives studied were not examined by heart specialists but by general practitioners of medicine over widely distributed territory, though many contained in the groups were examined by the medical directors of the company at their home office or by men especially qualified to do this work. No doubt had these examinations been made by cardiologists, the results would have been different, but this, of course, for obvious reasons was not practicable from a business standpoint on account of the expense involved in requiring the finer diagnostic aids, such as the electrocardiogram, the *x*-ray, etc., to which a cardiologist often wishes to refer before making a definite diagnosis. Following the lead of these pioneers, many of the companies are now insuring applicants exhibiting heart murmurs, on a rated basis. We must, however, always remember, as Chester Brown has pointed out, that "we must always keep clinical experience separate from insurance experience. The best clinicians assure us about certain forms of impairment and certain histories, and yet for some reason we have the feeling that groups of these individuals must not be insured the same as average-health persons; and that we must keep in mind that the insurance prognosis and the clinical prognosis are entirely different."

In spite of most careful examinations by ordinary clinical methods, and in spite of what clinicians teach us about the insignificance of heart murmurs, we know we *do* get an excessive mortality from circulatory disease, relatively higher at the younger ages and in the earlier policy years. The increased proportion of deaths from circulatory disease and nephritis bears out these conclusions. It may be that the murmur per se is not alone responsible for the high mortality. We believe that often other signs are present, though not detected by the examiner or not reported by him, which offers an added factor.

Statistics pertaining to life insurance mortality are based upon the actual experience of the companies, and I would remind you that the following statements are based upon figures compiled jointly by several of the leading insurance companies doing a substandard business which have accepted on a substandard basis the class of risks above referred to.

Before proceeding with statistical evidence pertaining to this subject, I would digress for a moment to explain rather briefly, for the benefit of those of you who are unfamiliar with the treatment of these cases by life insurance companies, by what means and upon what basis they

are handled, based as they are upon medico-actuarial practices.

To determine whether the death rate of any group of lives has been greater or less than normal, we compare the number of deaths with that number which would be expected in the group by a normal table of mortality—the result being expressed as a percentage. For example, if a given group shows 175 deaths over a given period of time, but the number expected according to the normal or standard mortality rate is 100, then the group would be said to show a mortality of 175% of the normal. As an illustration by way of interpreting this ratio, we will assume that we are considering an applicant, age 35, who has a mitral regurgitant murmur with slight hypertrophy, and no other circulatory or etiological impairment. Our practice dictates that this case should be rated 200%. This 200% rating does not mean that the applicant's actual cash premium is twice that of a normal life at this age; but it does mean that there is an added hazard or risk owing to this impairment for which an extra charge must be made, which in this case on the ordinary life plan would be $9.87 per thousand. It is common practice for most companies not to issue insurance to any applicant who rates over 225%.

TABLE I

MITRAL REGURGITATION WITHOUT HYPERTROPHY

Company	No. of Cases	Period of Study	Expected Deaths on Standard Risks	Actual Deaths	Ratio of Actual to Expected
N. Y. Life..	13,219	1896-1922	427.4	805	188%
Equitable	....	....	....	....	159%
Travelers	....	....	....	....	179%

42% of these deaths were from heart disease.

TABLE II

MITRAL REGURGITATION WITH HYPERTROPHY SUFFICIENT TO REQUIRE ADDITIONAL RATING

Company	No. of Cases	Period of Study	Expected Deaths on Standard Risks	Actual Deaths	Ratio of Actual to Expected
N. Y. Life.....	3,633	1896-1922	89.7	221	246%
Equitable	....	....	....	....	391%
Travelers	....	....	....	....	240%

59% of these deaths were from heart disease.

TABLE III

MITRAL REGURGITATION WITH LITTLE OR MODERATE HYPERTROPHY AND HISTORY OF INFLAMMATORY RHEUMATISM

Company	No. of Cases	Period of Study	Expected Deaths on Standard Risks	Actual Deaths	Ratio of Actual to Expected
N. Y. Life.....	2,538	1896-1921	115	361	315%
Equitable	....	....	....	....	429%
Travelers	....	....	....	....	238%

57% of these deaths were from heart disease.

In view of these reports from reliable sources, it must be apparent that the class of risks just discussed do not show an average mortality. It is also evident that an increased percentage of deaths occurs from circulatory disease. Rogers and Hunter of the New York Life report 42 per cent of deaths as due to heart disease where less than 4 per cent would be expected in a corresponding group of standard lives. Dr. Grosvenor of the Travelers Insurance Company reported 42 per cent of the deaths from circulatory diseases in contrast to an expected 5.5 per cent.

Studying these reports from another angle not indicated above, that is, in respect to age of entry of the risks, the natural impression would be that the mortality would be *less* at the younger ages rather than in *later* adult life. The reverse, however, is true, as shown by Table IV.

TABLE IV

SHOWING EXCESSIVE MORTALITY IN YOUNGER ENTRANTS

N. Y. Life Ins. Co. — Mitral Regurgitation Without Hypertrophy		*Travelers Ins. Co.* — Mitral Regurgitation Without Hypertrophy	
Ages at Entry	% Actual to Expected Deaths	Ages at Entry	% Actual to Expected Deaths
15-24	218%	-29	178%
25-39	202%	30-44	164%
40-49	172%	45 plus	125%
50 plus	130%		

Another interesting fact brought out in these reports is the variation of the mortality relative

to the duration of the policy. As great care was used in the selection of these risks, one would assume that the mortality in the earlier years would be considerably less than in the later years. Table V, however, shows this not to be true, as high mortality appears to be in the earlier rather than in the later policy years.

TABLE V

SHOWING EXCESSIVE MORTALITY IN EARLY POLICY YEARS

N. Y. Life Ins. Co. Mitral Regurgitation Without Hypertrophy		*Travelers Ins. Co.* Mitral Regurgitation Without Hypertrophy	
Policy Years	% Actual to Expected Deaths	Policy Years:	% Actual to Expected Deaths
1- 5	202%	1	243%
6-10	172%	2	74%
11-15	208%	3	240%
16 plus	131%	4	135%
All years	188%	5	139%
		6 & later	175%
		All years	169%

We are dealing, therefore, as Dr. Frost has pointed out "with an impairment, which, in spite of careful selection, carries an excessive mortality with increasing hazard of death from circulatory disease—a mortality relatively higher at the younger ages than at the older, higher in the earlier policy years than at the later, and at all times excessive."

It might be of interest to indicate here what the common practice of insurance companies is in rating this class of risks. The company which I am associated with follows the ratings indicated in Table VI.

We are of the opinion that our examiners in the field are becoming better qualified and more capable of furnishing us with data which are sufficient to enable us to place a more proper value on a risk than formerly. Better medical schools, more adequate training, and more attention to the responsibility undertaken account for this improvement. This is not only true of the large cities but is, in fact, quite general. With this in mind, the companies are prompted to extend their scope of activities quite freely and accept reports on the lives of impaired applicants showing certain types of heart murmurs.

TABLE VI

SYSTOLIC APICAL MURMUR, TRANSMITTED TOWARD THE AXILLA: USUALLY SOFT BLOWING IN QUALITY (MITRAL REGURGITATION)

Ages at Entry	Rated
10-20	170%
21-30	170%
31-40	180%
41-50	190%
51-55	200%
56 & over	Not accepted

If hypertrophy is present, add 20 to 40 points, depending upon the degree.

With history of rheumatism or other allied infection, add 40 points.

TABLE VII

"FUNCTIONAL MURMURS," CONSTANT—NOT TRANSMITTED, APICAL. FIRST SOUND WELL HEARD

Examined at Home Office or by especially qualified examiner, rated more leniently.

Ages at Entry	Rated
10-20	120%
21-30	120%
31-40	135%
41-50	150%
51-55	175%
56 & over	200%

CORONARY DISEASE*

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THE knowledge of clinical disorders of the coronary circulation had its origin in uncertain sources of the seventeenth century. Even the critical Harvey[1] leaves us in some doubt as to the exact pathology in the oft-quoted case of Sir Robert Darcy, who had complained of frequent "distressing pain in the chest, especially in the night season; so that dreading at one time syncope, at another suffocation in his attacks he led an unquiet and anxious life. He tried many remedies in vain, having had the advice of almost every medical man. The disease going on from bad to worse, he by and by became cachectic and dropsical, and finally, grievously distressed, he died in one of his paroxysms. In the body of this gentleman we found the wall of the left ventricle of the heart ruptured, having a rent in it of size sufficient to admit any of my fingers, although the wall itself appeared sufficiently thick and strong; this laceration had apparently been caused by an impediment to the passage of the blood from the left ventricle into the arteries." Riesman[2] credits Edward Jenner with the recognition of the dependence of John Hunter's anginal attacks upon coronary sclerosis. Parry in turn applied the information gained from his friend Jenner to his own practice and reported several similar cases, which were confirmed by necropsy. The medical profession has paid a costly tribute of illustrious physicians to coronary affections. Among these have been Charcot, Nothnagel and William Pepper. Of the last named, Osler[3] wrote, "The most brilliant and devoted physician of his generation in the United States died with coronary arteries like pipe-stems."

Affections of the coronary blood vessels and circulation are among the limited group of clinical conditions whose recognition preceded an accurate knowledge of the anatomy and physiology of the system involved. This anomalous situation led Spalteholz[4] to remark, "Eine rein experimentelle Arbeit hingegen ohne genaue Kenntnis des anatomischen Verhältnisse führt nur zu durchaus unsicheren Schlüssen; sie heisst ein Haus bauen ohne Fundamente!"

Singularly the earliest exact observations of Cohnheim[5] rejected the suggestion of anastomoses in the coronary arteries advanced by Weigert[6] and thus led to a controversy which carried down to the past decade. According to the Cohnheim school the coronaries were end arteries and occlusion led to death. By experimental studies Porter[7] deduced the fact that arrest occurred in direct ratio to the size of the coronary branch ligated. He was inclined to the belief that such anastomoses as existed were too inadequate for collateral circulation. Hence, "rapid closure of a coronary artery puts an end to the nutrition of the area which it supplied." Contrary to Cohnheim he affirmed that resumption of cardiac action attended removal of the ligature and massage. Miller and Matthews[8] encountered very interesting results in ligation studies, in that ligature of either of the main branches of the left coronary artery could be accomplished without ill effect. However, left ventricular arrest always attended ligature of the descendens branch 25 mm. or less from its orifice after previous ligation of the circumflex. No early cardiac disturbance developed on ligation of either of the two main branches of the descendens, but in from 1 to 3 months death supervened after acute symptoms of cardiac insufficiency.

From the anatomic viewpoint Hirsch and Spalteholz[9] established the existence of anastomoses (Fig. 1). They also pointed out the constant occurrence of a smaller infarct than the area supplied by the occluded vessel, because of the collateral circulation. Later Gross[10] and Spalteholz[11] independently published authoritative monographs on the blood supply of the heart and both confirmed the existence of arterial anastomoses. From the former source[10] the following coronary distribution may be abstracted. The right coronary, arising from the right anterior sinus of Valsalva, emerges between the aortic and pulmonic roots to half-encircle the heart in the auriculo-ventricular sulcus. Its branches supply the entire right ventricle with

*From the Department of Medicine, University of Wisconsin. Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

the exception of the left third of the anterior wall. Furthermore, certain of its branches supply the right half of the posterior wall of the left ventricle and a small strip of the inter-ventricular septum. The left coronary artery takes its origin in the left anterior sinus of Valsalva and passes under the left auricular appendage to divide into its important branches, the descendens and the circumflex. The descendens follows the anterior interventricular groove to round the cardiac apex and ascend the posterior interventricular furrow, supplying many branches to both ventricles. The left circumflex branch follows the auriculo-ventricular groove to the left and half-encircles the heart. Its ultimate arborizations reach the posterior surface of the left ventricle. The left coronary artery supplies the major portion of the left ventricle with the exception of the above stated contributions of the right coronary artery to the right half of the posterior wall and the interventricular septum. The left coronary artery also supplies nutrition to the small anterior portion of the right ventricle not supplied by the right coronary artery as well as the small anterior strip of the interventricular septum. The remainder of the septum and of the papillary muscles receive branches from both major coronary sources (Fig. 2). Particular physiologic and clinical importance attaches to the blood supply of the conducting mechanism of the heart. In 60 per cent of studied hearts Gross determined a right coronary supply to the sino-auricular node. The auriculoventricular node was supplied by the right coronary artery in 92 per cent. The right limb of the bundle is nourished by the left coronary artery and the left limb by branches of both coronary arteries. A peculiarly abundant blood supply is afforded the conducting paths. The inconstancy of the auricular blood supply does not admit of generalization.

Certain small vessels, notably the Arteriæ telæ adiposæ, may play an important rôle in establishing collateral circulation in event of interference in the major channels. The compensatory mechanism of nature in developing anastomoses in the coronary circuit in the face of impending occlusion of the accustomed pathways was first hinted by Weigert.[6] Later, Dock[11] wrote, "The capillary anastomosis, however, may become enlarged as a result of disease, a fact of great importance in certain cases. The rapidity with which an obstruction forms is, therefore, decisive in regard to the question of collateral circulation." Gross attributes to age a considerable importance in preparing such physiologically adequate anastomoses. This question will assume an increasing clinical pathological significance. The brilliant studies of Wearn[12] on the veins of Thebesius give an unexpected importance to their function in event of coronary embarrassment. By a mechanism to which he applies the term of a "shunt system," these small vessels may take on a large share of the load of venous discharge into the heart chambers in case of venous hypertension, and on the other hand may partake of a not inconsiderable

Fig. 1. Barium injection, coronary arterial system of the cat (by Drs. Jos. M. Steiner and Robert Drane).

nutrient function on coronary arterial interference.

The blood flow in the coronary arteries shows a definite increase at the beginning of systole and at the beginning of diastole. With cardiac contraction there is obviously a compression of the intramural branches of the coronary arteries with emptying of their contents. Thus flow through the myocardium is favored. Certain observers believe that the coronary arteries receive vasoconstrictor fibres from the vagus nerve and vasodilator fibres from the sympathetic system. Others claim that the coronary vessels are without vasomotor control.

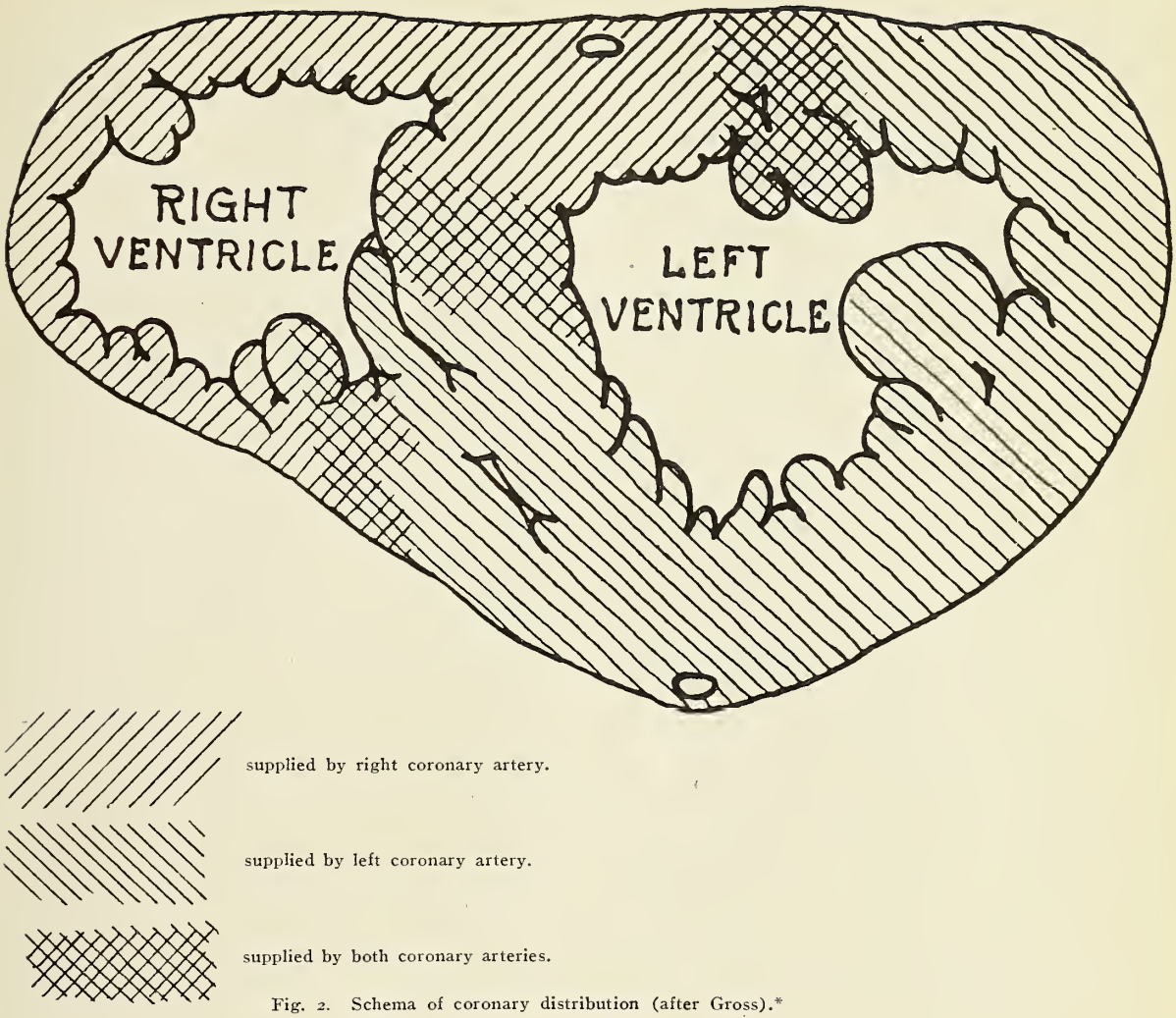

Fig. 2. Schema of coronary distribution (after Gross).*

The latter position casts a serious doubt on the occurrence of coronary spasm, although as a clinical explanation for anginal attacks terminating fatally without demonstrable gross or histologic lesions, this time-honored term will doubtless hold sway until a better one takes its place. Of the demonstrable lesions affecting the coronary arteries three are of primary importance, namely atheroma (or sclerosis), embolism and thrombosis. Luetic aortitis with narrowing or occlusion of the coronary orifices is of more than passing interest. Of the primary pathologic lesions of the coronary system embolism is least common and from a practical standpoint almost negligible. Dock[13] relates a clear cut case of coronary embolism established by necropsy, in which the ulceration and rupture of an "atheromatous abscess" in the left descendens led to embolism in its smaller subdivisions with infarction. Especial attention will herein be directed to coronary sclerosis and to its not uncommon outcome, thrombosis.

The clinical syndrome or entity of angina pectoris is so inseparably linked with a disturbance of coronary circulation in the minds of the vast majority of practitioners that it must receive our consideration before entering upon a discussion of coronary sclerosis and thrombosis. An overwhelming literature has grown about this subject and it is well to crystallize one's ideas as to the status of our information. Several positions are held relative to the pathogenesis of angina pectoris. Huchard[14] maintained that an endarteritis of the coronary vessels was the pathologic lesion of angina pectoris, whereas with great vehemence Allbutt[15] has held that the essential

*This figure is reproduced through the courtesy of Paul B. Hoeber, Inc.

pathology is in the aorta. The intermittent claudication theory receives somewhat less support from modern cardiologists. Acute dilatation of the heart was advanced by Lauder Brunton in explanation of angina. At the present time there is a definite tendency to strip away all qualifying terms, such as pseudo and the like, which tend to befog the true significance of the disorder. Vaquez[16] holds that angina pectoris is characterized by three outstanding symptoms, "Pain in the chest, situated usually behind the sternum, more rarely precordial; radiating pains in the upper part of the body, notably in the left arm and shoulder; and a sense of imminent death or dread which goes hand in hand with the pain." From this framework the clinical picture can readily be drawn from our individual experiences. Particularly should attention be directed to Vaquez's arbitrary subdivision of the condition into angina of effort and angina of decubitus. Depending upon the pathologic viewpoint his further discussion of these types may or may not be logical. At least the idea serves as an interesting point of clinical attack.

Coronary sclerosis may occur as a part of a general athero-sclerosis. Syphilis is an undoubted etiologic factor in coronary sclerosis but of less frequent incidence than commonly held. The infectious diseases are responsible only in the same proportion as they induce sclerotic changes in other small vessels. Gout, diabetes mellitus and lead-poisoning have been mentioned in like relations. Other toxins, endogenous and exogenous, may act similarly. Hypertension may be a factor. Obviously age, sex, effort or occupation and habits have their influence. Pathologically coronary sclerosis is typically a lesion of the fifth decade or upward, affecting the male sex more commonly and, by preference, those of vigorous habit. Overeating, alcoholic overindulgence and the excessive use of tobacco may have some undetermined influence in its development.

The result of coronary sclerosis which is insufficient to induce occlusion of a major branch of the coronary arterial system per se, is gradually advancing fibrosis of the myocardium. The basic process in the vessels is usually an obliterating endarteritis. Quain's[17] earlier idea of a fatty change in the myocardium from sclerosis of the coronary arteries is no longer maintained. Weigert[6] and Huber [18] on the Continent and Turner[19] in England directed attention to the fibroid change in the myocardium resultant upon coronary sclerosis. The last named in explanation wrote, "It would seem that by blocking up of some branch of the coronary artery, with its ramuscules, a certain tract of the myocardium had become deprived of blood."

As to the clinical importance of such changes in the coronary arteries and in turn the myocardium, especially as an etiologic agent in angina pectoris, Kretz[20] expressed serious doubt. From an extensive study of the pathology of coronary arterial disease Benson and Hunter[21] concluded that sclerosis alone "rarely if ever produces serious effects." Willius and Brown[22] in a careful analysis of 86 cases of coronary sclerosis coming to necropsy determined the universal presence of myocardial degeneration. Anginal attacks in over a quarter and evidences of progressive myocardial failure in an even higher proportion were striking facts gleaned from the histories. The termination was sudden in thirty-two of their eighty-six cases.

Certain it is that the margin of safety in the coronary circulation is wide. Hence, sclerotic changes may be quite advanced before leading to myocardial insufficiency or signs attributable to coronary occlusion. Indeed, as has been previously pointed out, sclerosis favors anastomosis and collateral circulation. Oberhelman and Le Count[23] conclusively proved that two factors, namely pre-existent channels and time to establish anastomoses, determined the outcome in coronary occlusion. In a word, where there had been previous sclerosis, adequate anastomoses existed; but as a rule without antecedent or with minor vascular changes inadequate or no anastomoses existed. In few cases were collateral channels found in the absence of arterial or myocardial disease.

The clinical picture of coronary sclerosis, if angina pectoris be omitted, is poorly defined and hazy. Osler's[3] designation of the physical type in angina pectoris holds here: "The robust, the vigorous in mind and body, the keen and ambitious man, the indicator of whose engines is always at 'full speed ahead.' There is, indeed, a frame and facies at once suggestive of angina—the well 'set' man of from 45 to 55 years of age, with military bearing, iron-grey hair, and florid complexion." To the physical type may be added the syndrome of angina pectoris, if one be of the Huchard school. Indeed, one is led by the

antecedent history of coronary thrombosis to include a group of so-called cardiac pains under coronary sclerosis. The almost constant incidence of indefinite attacks of indigestion without apparent reason following effort has been remarked in histories of coronary thrombosis. It is entirely proper to include such ominous warnings as indicative of coronary sclerosis. Symptoms of circulatory incompetency may express the myocardial defect dependent upon coronary sclerosis. Particularly does unaccountable dyspnea fall under this heading; and in the senile type of coronary sclerosis, paroxysmal dyspnea at times succeeds effort. Arrhythmia of varying orders may be the sole expression of coronary interference. An unusual physical weakness and lack of stamina has marked certain cases, but it is impossible to accurately evaluate the responsibility of the coronary involvement. In brief, a clear clinical picture of coronary sclerosis is not obtainable; the major features are assumed by the inference of its responsibility for the foreboding symptoms of coronary thrombosis. The clinical seriousness of coronary sclerosis is apparently not determined by its extent or degree. It is especially significant as the forerunner of coronary thrombosis.

By tacit consent clinicians in this country have come to regard coronary disease as thrombosis. Obviously this position is incorrectly taken; but it doubtless grows from the preëminent contributions of American clinicians to the knowledge of this subject and from the well-defined clinical entity established by their efforts. Be that as it may, the common recognition of coronary thrombosis antemortem is a development of the past twenty years. With this progress has come a proportional decrease in the lay diagnosis of acute indigestion made in cases of sudden death by medical men. Further stimulation to the study of coronary thrombosis has attended the appreciation of the fact that it is not always immediately fatal nor for that matter inevitably fatal after a period of years. Dock[11,13] gave the first American description of the condition and his thoroughgoing analysis, at the bedside and on the necropsy table, deserved a better fate than the comparative oblivion which attended the contributions. Herrick[24] after a lapse of sixteen years revived the interest in the clinical study of coronary thrombosis in this country. Among the contributors to the American literature have been Pardee,[25] Blumer,[26] Longcope,[27] Riesman,[2] Wearn,[28] Willius,[29] Gordinier,[30] Christian,[31] Levine[32] and Hamman.[33] The last named has given an exceptionally able résumé and analysis of the present status of our information on the subject.

If the relationship of coronary sclerosis to thrombosis be granted, obviously the etiologic factors therein discussed will have a similar bearing in the present relation. Arteriosclerosis appears to be the sole constant in the pathologic background of thrombosis. In large measure dependent on this factor will be the degree and adequacy of the collateral coronary circulation. Age may lend a measure of aid in this direction. The general condition of the patient unquestionably plays a part in determining both the occurrence and the result of coronary thrombosis. Important in the clinical manifestations and the prognosis of this condition are the size and the particular branch of the coronary vessels occluded. Not uncommonly complete occlusion of a coronary vessel may occur without symptoms or histologic evidence of disturbed myocardial nutrition. In cases of coronary thrombosis giving rise to clinical symptoms the descendens branch of the left coronary artery is the occluded vessel in an overwhelming majority.

Obratzow and Strachesko[34] grouped the clinical manifestations of coronary thrombosis under three headings:

1. Status anginosus—prolonged pain
2. Status dyspnœicus—extreme dyspnea and orthopnea
3. Status gastralgicus—severe epigastric pain.

Classically the occlusion of a considerable branch of the coronary artery is attended by a severe vise-like pain beneath the lower end of the sternum or in the epigastrium. This pain is more protracted than that of simple angina pectoris, although it may be the culmination of repeated attacks of typical angina. It may last for hours or for days. While more severe than true angina, the pain of coronary thrombosis has a more circumscribed distribution and manifests a lesser tendency toward radiation. This status anginosus is particularly refractory to treatment. The nitrites have no influence on its course and even morphine may be totally ineffectual in controlling the pain. The coincidence of nausea and vomiting or the occasional relief of the milder attacks with the eructation of gas or the passing of much clear urine may prove very misleading.

To add to the confusion, tenderness and rigidity may be present in the upper abdomen. Dyspnea is a very common symptom and the subjective expression of this distress is frequently more striking than the objective signs. This fact may definitely suggest coronary occlusion. Profound weakness or asthenia supervenes. Diarrhea is common. Somewhat later, cough, hemoptysis, vasomotor flashes, sweating, convulsions and coma may occur. As to the mental state a perfect appreciation of the situation is the rule with pronounced angor animi. Death may eventually be welcomed as a release from the agonizing pain.

The physical status of the patient is striking. Libman[35] recalls the description of the unusual cast of the skin originally applied by Sansom to certain cases of aortitis, a "leaden color covering an earthy tint." The dyspnea has been described. Acute overdistention of the lungs is common and basal congestive râles are early found in all cases. An ominous quiet is remarked in the precordial activity. The imperceptible apical impulse is in strange contrast to the evident circulatory embarrassment. Cardiac dullness may be extended. The heart sounds are feeble and frequently of an embryo-cardiac order. Arrhythmias, particularly auricular fibrillation and flutter, are commonly encountered. Heart block and pulsus alternans are feared prognostic signs of altered conduction. Rapid pulse is constant and concurrently the blood pressure is sharply depressed with a low pulse pressure. Particular significance attaches to the characteristic fine pericardial friction which appears within eighteen to thirty-six hours after coronary occlusion and is heard over a very small area. The fine quality and the evanescent nature of this circumscribed friction probably account for its frequent oversight, but its detection after an anginal attack clinches the diagnosis. Failure to determine its presence may depend upon the above difficulties, but it is not constant. Gorham[36] remarked an unusual tendency for the disappearance and reappearance of this sign. The pericardial involvement depends upon the infarction's impingement on this serous membrane. Absence of the dorsalis pedis pulse has been pointed out by Riesman[2] in cases of coronary thrombosis. Its significance is inferential. A fever of from 100° to 102° F. commonly succeeds this accident and Libman[37] has called attention to an interesting leukocytic reaction to coronary thrombosis. In one-half of such cases the leukocytes ranged between 15,000 and 30,000 with 78 to 91 per cent polymorphonuclears. A leukocytosis is constant and at times begins within two hours after the attack and independent of attendant pericarditis. The necrosis of infarction probably calls out this reaction. Occasionally hydrothorax, general anasarca and engorgement of the liver may occur. Less commonly albuminuria, suppression of urine, and Cheyne-Stokes' respiration have been remarked. Finally the subsequent development of embolic phenomena may conclude the early picture. A glance at the dual nutritive responsibility of the two major coronary arteries will prove the fallacy of attempting to designate which coronary artery is thrombosed by the circuit in which evidences of embolism appear.

Two cases of characteristic coronary occlusion are related:

Case 1.—E. H., sixty-four years of age, an obese diabetic, was readmitted to the Wisconsin General Hospital on November 8, 1925, with a history of abdominal distress. Fifteen days previously he had suffered from severe "gas pains," which were relieved by sodium bicarbonate. This relief was quite temporary and the gas rapidly reformed. On the following day, again succeeding the ingestion of food, the "gas pains" recurred and a "dead feeling" in the stomach with marked anorexia supervened. These symptoms continued for five days when there were added epigastric oppression and dyspnea. On the seventh day after the onset pain appeared in the left shoulder and radiated down the left arm. This pain was described as sharp or neuritic and was treated with some relief by rubbing. Jaundice with clay colored stool was noted two days before admission, but continued for only one day, when excruciating pain in region of the heart developed with marked dyspnea. The pain was described as "feeling as if he were rubbing two hands about heart." It persisted for one-half to three-quarters of an hour and the patient remarked that "if it had lasted longer, would have been unable to stand it." Recurrence of this pain in the morning led to his admission. Dyspnea had grown progressively worse since onset.

The pertinent findings follow: The apprehension was apparent. Cyanosis was moderate. The breathing was labored. Signs of fluid at the right base were established. Many râles, large and small, moist, sonorous and sibilant were heard through both chests. Widening of the cardiac dullness was determined. Tachycardia (106) and distant heart sounds were remarked. The blood pressure was read at 100/74. There was free fluid in the abdomen. The peripheral vessels were slightly thickened. The leukocytes numbered 11,000 with 74 per cent polymorphonuclears.

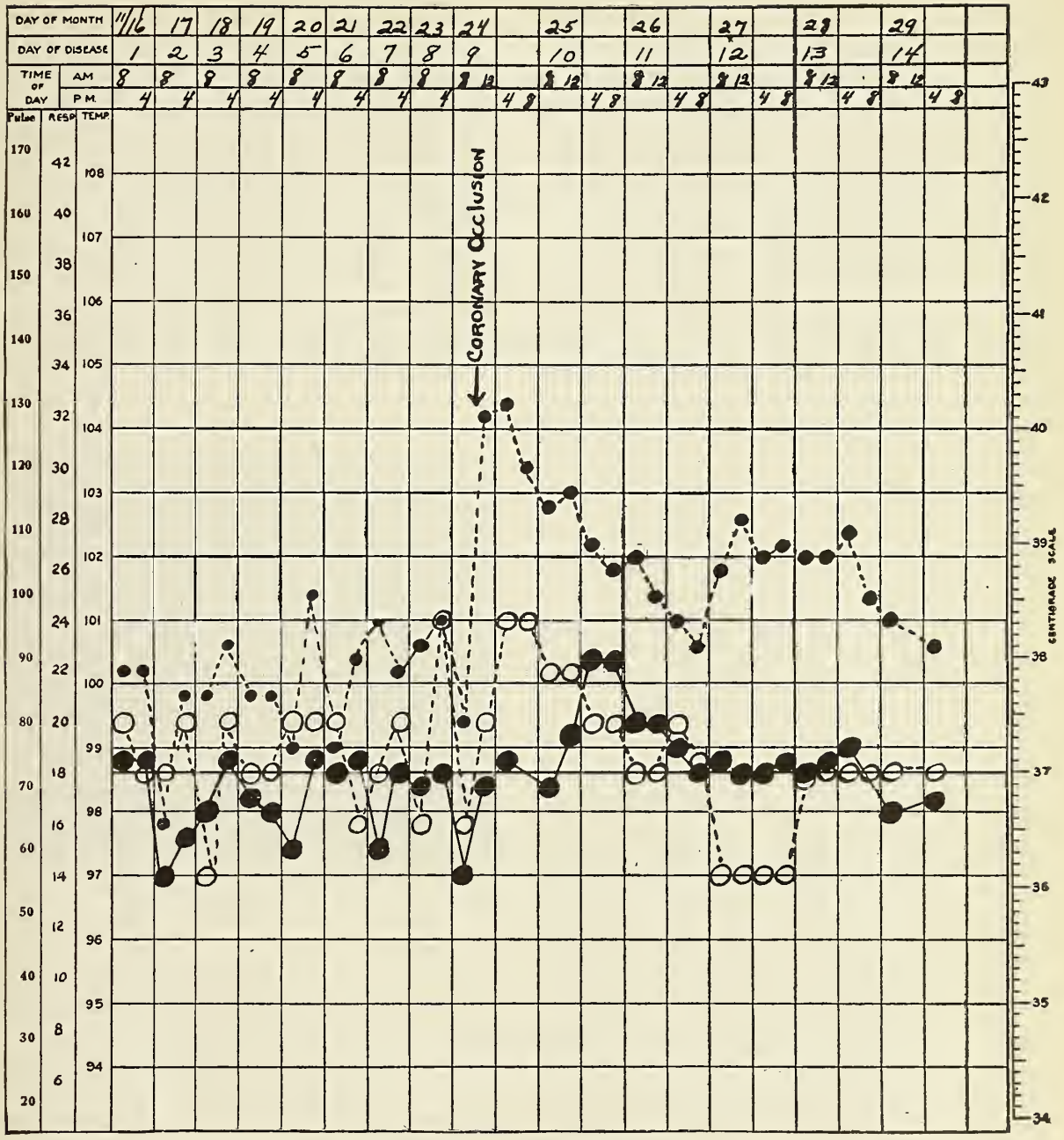

Fig. 3. Graphic chart of Case 2.

T ●——●
P ●----●
R o----o

A pericardial friction had appeared on the second day. The evidence of pulmonary congestion persisted. The liver was palpably enlarged. Edema appeared in the arms and legs. An electrocardiogram showed auricular fibrillation. T was flat in all leads and the voltage was likewise low in all, substantiating the clinical opinion of an advanced myocardial degeneration. There was a suggestion of a plateau on the down-stroke of R_2 and R_3 from which the T waves arose. Inconstant bigeminus appeared. The peripheral evidence of circulatory incompetence steadily abated. The pericardial friction persisted until death twelve days after admission and the electrocardiogram a day before the termination showed a maintained low voltage with T_1 flat and T_2 and T_3 negative. The P R interval was 0.24 seconds and the QRS 0.07 seconds. Fibrillation had disappeared.

The immediate circumstances of his death were quite interesting. The day had been very quiet and comfortable. The patient received a large group of friends

and enjoyed their visit greatly. On their departure he was still perfectly comfortable and in the best of spirits. He denied being fatigued. Ten minutes later he was found dead without evidence of a struggle.

Case 2.—C. Z., a male, forty-eight years of age, engaged in office work, was admitted to the Wisconsin General Hospital on November 16, 1926, with a thrombo-phlebitis of the left femoral and long saphenous veins. Subsequently similar changes developed in the right leg. Eight days after admission while being moved cautiously to change the bedding patient experienced a sharp syncopal attack. Extreme substernal oppression was remarked and as the patient expressed himself, "There did not seem to be enough air in the room." Orthopnea was noted with a peculiar inspiratory difficulty. The pulse was rapid (136), regular and of small volume. The marked depression lasted 15 minutes, but orthopnea and nausea persisted throughout the day. Several short coughs at the onset were unproductive. The patient volunteered the information that he had had a restless night prior to this experience because of slight indefinite abdominal discomfort and further that with the onset of the attack he had felt unable to summon help. The leukocytes numbered 10,350.

The succeeding day the skin was leaky. The pulse remained small and running. The blood pressure registered 86 mm. systolic and 72 mm. diastolic. The temperature was elevated to 100.4 F. (Fig. 3). A soft to and fro pericardial friction rub was heard in the fourth left interspace close to the sternum and there appeared also a soft apical systolic murmur. The second day following the attack found definite circulatory improvement with disappearance of the friction rub. The blood pressure was read at 98/65. The following day, however, there recurred an attack similar in type but less in severity than that above described. The collapse was not as profound. The pericardial friction rub reappeared. Within nine hours a peculiar arrhythmia made its appearance. Occasional strong beats with clear muscular tone succeeded series of weaker contractions which suggested the runs of a kettle drum. The blood pressure was 82/68. Again the next day a mild syncopal attack was experienced. The arrhythmia described continued for two days. Electrocardiographic study was impossible at this time but previous and subsequent tracings showed no abnormality. The blood pressure did not resume its normal level for three weeks, but the general condition improved more rapidly. For a period of four months after the initiating symptoms occasional attacks of nausea and weakness were reported. The patient is steadily increasing his physical effort without apparent ill effects or setbacks, seven months after the coronary accident.

Case 1 represents the clinical type of coronary thrombosis which is most commonly mistaken for a surgical condition of the upper abdomen. The occurrence of jaundice made the problem even more difficult. Case 2 may be termed one of embolism from the femoral thrombosis, if the pulmonary capillary bed be assumed to have been traversed, or coronary thrombosis.

Repeated mention has been made of the electrocardiographic changes in coronary thrombosis. Pardee[25] described a peculiar plateau succeeding the R wave, from which elevation the T arose, in cases of recent coronary occlusion (Fig. 4). Later this plateau seemed to descend on the R wave and the T became very deep. Smith[38] followed up an excellent experimental study by observations on eleven clinical cases of coronary thrombosis and concluded that the electrocardiogram in such cases showed a negative T_1, T_2 and

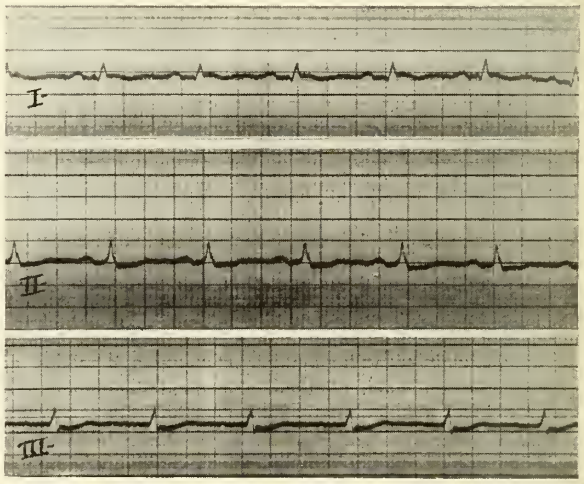

Fig. 4. Electrocardiogram, succeeding thrombosis of the descendens branch of the left coronary artery.

T_3 ultimately or two of these waves were negative. The QRS complexes were of low amplitude. In this report he refers to the case of a wound of the myocardium repaired by Davenport at Cook County Hospital in which it was necessary to ligate the descendens branch of the left coronary artery. The T waves were negative in the three leads for a time postoperatively, but eventually became upright in leads I and II. Although electrographic changes may be wanting in coronary thrombosis, their occurrence is of great diagnostic importance.

Aside from its importance in prognosis and treatment the exact diagnosis of coronary thrombosis has a very practical application in the control of two divergent surgical procedures. These measures must be considered separately. In the first place the growth of surgery in the treatment of angina pectoris necessitates its differ-

entiation from coronary thrombosis, in which operation would not only be contraindicated but even very dangerous. The history of the present or prior attacks may be helpful. Digestive symptoms are less common in angina pectoris. The greater severity, longer duration, lower localization and lessened tendency for radiation of the pain of coronary thrombosis must be borne in mind. Furthermore, the pulse is markedly elevated, the heart action weak and the blood pressure depressed in coronary thrombosis as compared with negligible or inconstant changes in these factors in angina pectoris. Finally the febrile reaction, leukocytosis, pericardial friction and electrocardiographic changes incident to coronary thrombosis are not seen in angina pectoris. As a therapeutic test the pain of coronary thrombosis is not relieved by the nitrites, contrasting sharply with the relief of angina pectoris. It should not be necessary to await signs of remote embolism to make the distinction.

Similar details must be utilized in differentiating coronary thrombosis from upper abdominal conditions. The nausea and vomiting, epigastric pain, tenderness and rigidity and even jaundice of coronary thrombosis certainly direct the attention to the abdomen rather than to the thorax. Cholecystitis, gallstone colic, renal colic, Deitl's crisis, acute pancreatitis and rupture of a hollow viscus are among the erroneous diagnoses in coronary thrombosis. A careful history may elicit the previous occurrence of mild anginal attacks with especial relation to the ingestion of food. Further the occurrence of indigestion after exertion and finally the relation of exertion itself to the onset of the painful seizures may be important leads toward the diagnosis of coronary thrombosis. Most of the acute abdominal conditions occur at an earlier age than does coronary thrombosis. Subjective or objective dyspnea, so common and so striking in coronary occlusion, are not outstanding, if present, in abdominal conditions. Study of the exact position and reference of the pain may differentiate. The feeble pulse and heart sounds, low blood pressure, pericardial friction rub, embolic phenomena and electrocardiographic changes of coronary thrombosis are evidences which the careful clinician will elicit to avoid a needless abdominal operation in debatable cases. After the acute phase of the painful attack one of the dyes or the opaque substances for the visualization of the gall bladder and the urinary passages, respectively, may be called upon for differentiation. Lastly a routine neurologic examination will rule out gastric crises of tabes dorsalis.

The immediate prognosis of coronary thrombosis is determined by the size and location of the vessel occluded, the factors responsible for an adequate collateral circulation and the time element in the process of thrombosis. The trend of the blood pressure is an excellent guide in the early prognosis. A falling pressure or a maintained low level is an ominous sign, as is also evidence of decompensation. Immediate death from ventricular fibrillation may result, but the ruling opinion is that sudden death on the primary occlusion is unusual. Apparent recovery may be succeeded by an unexpected termination after days or weeks. A complete functional recovery not infrequently succeeds coronary thrombosis, even though a considerable branch be occluded, by reason of adequate collateral circulation or canalization of the thrombus. Rupture of the heart may occur through the area of infarction. Abscess of the heart wall may succeed the lodgment of an infected embolus. Fatal embolism in organs other than the heart may occur from the intracardiac thrombi which attend infarction. If fibrous tissue replace the necrotic zone of myomalacia, dilatation locally with aneurysm formation may result. As in the experiments of Miller and Matthews[8] myocardial insufficiency may supervene at a more or less remote period and in such instances the final decline is rapid. After a series of anginal attacks status anginosus may determine the exitus. Peculiarly the painful seizures may completely disappear on the development of myocardial weakness. White[39] reported a group of sixty-two cases of coronary thrombosis with an average duration of life of almost two years after the attack. One-half of this group were still alive at the time of this report, further increasing the expectancy of life after coronary thrombosis.

As to treatment, opinions differ widely on the advisability of exhibiting digitalis. In general it should be reserved to meet the obvious indications of decompensation. Caffein and camphor have been recommended in the early cardiac depression. Their usefulness is doubtful. Epinephrin may be used in the circulatory collapse of coronary thrombosis. The nitrites are totally in-

effectual in relieving the pain. Leeching may prove beneficial in this relation. Morphine, although frequently without influence on the pain of coronary thrombosis, should be given in maximal doses. Its central nervous effect may be very useful. In the same connection the bromides and other mild sedatives are indicated for the continued care of the patient after coronary occlusion.

The after-care of the surviving cases of coronary thrombosis demands especial attention. The diet should be bland and easily assimilable. Small meals more frequently are preferable to the usual routine. Overdistention of the stomach must be avoided. Attention should be directed to the maintenance of the normal bowel function. Bed rest must be enjoined for at least six weeks. Thereafter physical effort must be resumed by easy stages, avoiding sudden circulatory loads and fatigue. Breathlessness and palpitation are relatively safe criteria of the limits of exertion. The blood pressure observations will further safeguard this regimen of physical rehabilitation. As Thayer[40] has pointed out in the discussion of the management of angina pectoris, the patient must be taken fully into the confidence of his physician, who will point out that his program of training differs from that of the athlete only in degree. The family must especially be partners in the care of the patient. Their undue solicitude may render him totally unhappy and uncomfortable; yet a thoroughgoing understanding and a coöperative interest on their part are essential to the proper management of the patient.

Thayer's analysis[40] of the outlook in the angina pectoris may be applied with little reservation to coronary thrombosis. "Angina may be a cruel and a painful malady leading to hopeless invalidism and long pre-mortal suffering. But often with proper treatment the patient may have years of usefulness and happiness in a life to which the excesses of activity alone are denied. The attacks, though distressing, may often be quickly relieved, and, in the end, the patient may pass from the turmoil of life to the peace of that which we call death in the twinkling of an eye, without a pang, without a movement, without a care."

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THE HEART IN INFECTIOUS DISEASES: AN ELECTRO-CARDIOGRAPHIC STUDY*

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DURING and following the various acute infectious diseases evidence may develop of a disturbance in the circulation. Almost any severe infection may be interrupted by an acute collapse with precordial pain, vomiting, apathy and pallor, changes in the rate and rhythm of the pulse and a marked drop of blood pressure. Also in convalescence a shock-like collapse may occur, most often in diphtheria, but also in other infections. More often following the various infectious diseases, the patient may develop such symptoms as fatigue, dyspnea on exertion, palpitation, dizziness and at times syncope.

The deranged circulation associated with infections has been the subject of considerable study, chiefly along two lines of investigation, (1) by physiological experiments, and (2) by postmortem examinations. The conclusions arrived at by these methods are somewhat contradictory.

In 1899 Romberg and his associates, using the physiological approach to the problem, inoculated rabbits with pneumococci, diphtheria and pyocyaneus bacilli. They concluded that death was due to a failure of the vasomotor control of the arteries which allowed the blood pressure to fall, and that the heart muscle suffered secondarily from the lack of nutrition. These conclusions were based on the fact that the methods which ordinarily induce vasomotor reactions were ineffectual in the toxic animals. This conception of a vasomotor paralysis in infections was accepted by many for a considerable time. MacCallum, in 1914, with different experimental procedures and using a diphtheria toxin, arrived at a similar conclusion. Although he conceded that a myocardial weakness might play a part, he believed that the most important factor was a vasomotor paralysis.

Pathologists, on the other hand, studying the heart after toxic conditions, point to the degenerative changes which may be present in the myocardium and they insist that this type of heart muscle can play an essential part in a circulatory insufficiency. One may object to a final conclusion from this kind of evidence because of the well known difficulty in correlating myocardial function with structural change. It appears very probable that the contradictory conclusions arrived at by these two methods of investigation can be explained on the basis that bacterial toxins produce a poisoning of both the heart and vasomotor apparatus. The degree with which one or the other is affected may depend on the kind of toxin, on the dosage, rate of absorption, variations in resistance and certain unknown factors. MacCallum, for instance, injected a massive dose of diphtheria toxin into his animals and showed the presence of an impaired vasomotor center. Edmunds, recently studying the effects of digitalis in diphtheria-poisoned dogs, administered the toxin at a much lower rate and found that cardiac stimulants were effective in raising the blood pressure. The essential point in any given case is to determine which of these mechanisms is operating, and it is of special importance to know whether the myocardium is involved. This is well expressed by Allbutt in the following paragraph: "In infections we know that the heart is concerned in three ways: in some of them it is directly attacked; in others it seems to suffer rather from a general depreciation in common with other parts and tissues, an impairment due apparently to pyrexia or to some diffuse effect of the specific poison; in others, again, from a dissociation from its peripheral complement, from a loss of tone in the 'peripheral heart,' so that it beats the air in vain. Now, for these different conditions, have we any crucial symptoms by which to distinguish them? Have we in a particular case any criterion by which, in an infectious disease for instance, we can discriminate myocardial lesion, myocardial sympathy with a more general and temporary debility, and slackening of the peripheral circulation?" Allbutt goes on further to evaluate the various signs and symptoms which may occur, and con-

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cludes that there are none which will definitely indicate whether or not the myocardium is involved in the general process. The present study is an attempt to determine whether the string galvanometer offers any aid in the detection of myocardial involvement in infections.

ELECTROCARDIOGRAPHIC EVIDENCE OF MYOCARDIAL DAMAGE

The string galvanometer first used almost entirely in the study of cardiac irregularities has more recently been applied to the detection of myocardial damage. Certain alterations of the ventricular portion of the complex can be experimentally produced by injury to the myocardium in various ways. For example, interference with the blood supply of the heart by ligating branches of the left coronary artery or by experimental coronary embolism, will invert the normally upright T wave. The introduction into animals of substances which injure the myocardium, such as spartein sulphate and adrenalin, is followed by T inversion.

In clinical conditions inversion of the T wave in leads I and II is usually found associated with serious cardiac disease. In hypertension heart where the myocardium is reduced in function due to chronic fatigue, T negativity is common. In coronary disease where large patches of fibrosis may occur, T inversion is also very frequent. The serious import of the presence of this electrocardiographic sign is emphasized in the statistical studies of Willius. He showed that approximately 60 per cent died a cardiac death within a year. This indicates that T inversion may be regarded as evidence of severe myocardial injury.

Another evidence of myocardial injury which is less frequently seen clinically is widening and notching of the QRS portion of the ventricular complex. This is also usually noted in association with serious cardiac pathology. An additional electrocardiographic finding which is also observed is prolongation of auriculo-ventricular conduction. This is found at times in apparently normal hearts and is undoubtedly an evidence of injury of a lesser degree. The following consists of an electrocardiographic study in various infectious diseases, attention being directed to these graphic evidences of myocardial injury.

Observations in Diphtheria.—The first studies were carried out in diphtheria, since the general impression is that of all infectious diseases this is the one which most notably affects the heart. Smith, McCulloch and Marvin have carried out electrocardiographic studies during the acute stages of diphtheria. They show that marked abnormalities are almost constant in the severe cases, indicating disturbances in the auriculo-ventricular conduction. The present observations were carried out in convalescence, since circulatory collapse and death may occur without warning during this period. Fifteen cases were studied, for the most part in the third week of the illness. All the patients had recovered from the initial throat infection and had negative throat cultures for diphtheria bacilli. There were no distinct cardiac symptoms with the exception of palpitation on slight exertion, such as change of position. There were no physical signs which could be interpreted as definite indications of myocardial involvement. Of the fifteen cases, seven showed changes in the electrocardiogram indicating pathology. This consisted of inversion of the T in one or more significant leads. Aside from this finding there were no important electrocardiographic abnormalities with the exception of extrasystoles in two cases. The T inversion was very definite and was present in lead I in one instance and leads I and II in another, in leads II and III in three cases and in the remaining two it was present in all leads. In two of the cases sudden death followed within a week after the records were taken. In the remaining five the patients were observed over a long period when the T became upright, usually at about two months after the onset of the illness. Two of the patients were under constant hospital observation during the entire period in which these changes were taking place, electrocardiogram tracings being made every third day. The return to normal was a gradual one, the T wave becoming first less negative, then isoelectric, and finally upright. The following are two illustrative cases:

Case 1.—M. B., aged 20, entered the contagious hospital October 30, 1925. She was very ill for about four days, but gradually improved. On the seventh day she had an attack of precordial pain, vomiting, and a slow pulse was noted. A heart block was suspected at this time, but unfortunately an electrocardiogram was not obtained. She cleared up under various stimulants. Fifteen days after admission her throat cultures were negative and her progress had been entirely satisfactory. She was allowed to sit up in bed but her pulse rate increased on even such slight exertion. Ex-

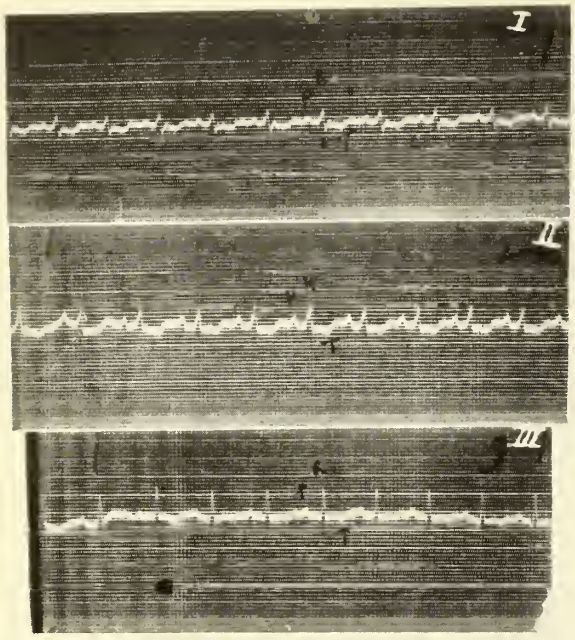

Fig. 1. Case I. Leads I, II and III showing inversion of T in all leads four weeks after onset of diphtheria. Patient died suddenly a week after this record was taken.

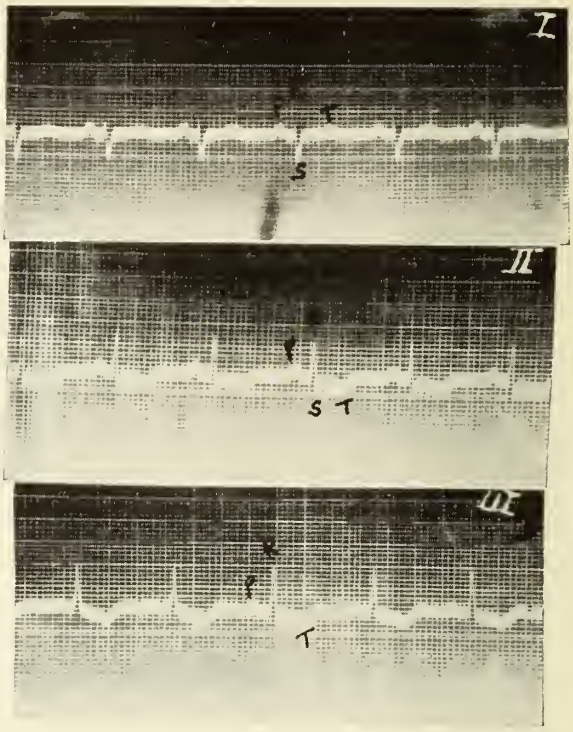

Fig. 2. Case II. Leads I, II and III showing inversion of T in leads II and III in third week of diphtheria.

amination one week later showed a possible slight dilatation, a gallop rhythm and an occasional extra systole. At this time an electrocardiogram (Fig. 1) showed inversion of the T in all leads with low voltage. Another record a few days later showed the same changes. Six days after this second record, while sitting up in bed and reaching for a pitcher of water, she gasped, fell back and died within a few minutes. This illustrates a case in which myocardial involvement could not have been diagnosed definitely without the electrocardiogram in spite of the fact that a condition of sufficient severity to cause death was present.

Case 2.—M. W., aged 24, developed a sort throat November 14, 1926, and was admitted two days later to the contagious hospital where a diagnosis of diphtheria was made, and antitoxin was administered. Fifteen days after admission practically all of the symptoms had disappeared and an electrocardiogram showed inversion of the T in leads II and III (Fig. 2). Repeated electrocardiograms were taken several times a week, showing no change until January 7, 1927, seven weeks after admission, when the inverted T was replaced by a flat iso-electric T. This flat T persisted until January 21, when an electrocardiogram showed low but upright T waves. Since that day all the records have shown definitely positive T waves. The patient was kept at rest in bed and was not allowed to sit up until the T wave became upright. She was seen again six and one-half months after the onset of her illness and felt well aside from some weakness. The examination of the heart was negative and the electrocardiogram was entirely normal.

A study was also made of the effects of injection of diphtheria toxin on the electrocardiogram in cats. After a control record was taken, a sublethal dose of diphtheria toxin injected subcutaneously, subsequent records were taken every second day. In ten experiments electrocardiographic changes were noted in eight, the alterations resembling those noted in the diphtheria patients. There was inversion of the T wave in one or more leads in each of the eight animals. In addition to the T wave inversion, widening of the QRS portion of the complex was also present in two cases. In two of the animals living for ten days following the injection there was a definite tendency for return to the upright T. Figures 4 and 5 are records during one of the experiments. From the above observations in diphtheria patients and animals with diphtheria toxemia, one may conclude that alterations in the electrocardiogram with inversion of the T may be used as evidence of damage to the myocardium by a bacterial toxin.

Observations in Other Infections.—A group of thirty cases of various infectious diseases was studied for comparison, consisting chiefly of rheumatic fever, pneumonia and scarlet fever.

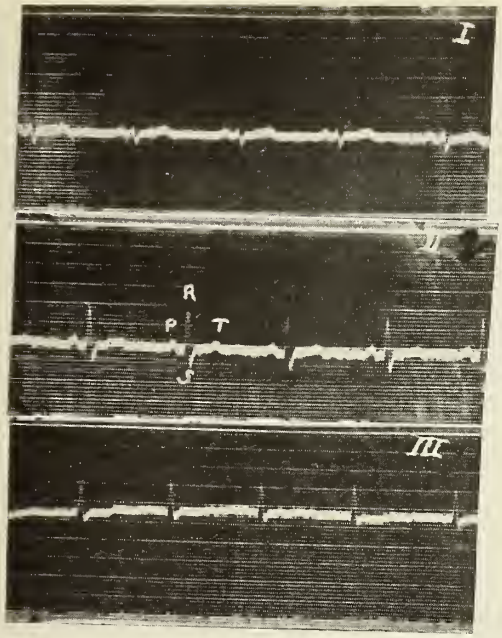

Fig. 3. Case II. Leads I, II and III showing return to upright T, seven weeks after the onset.

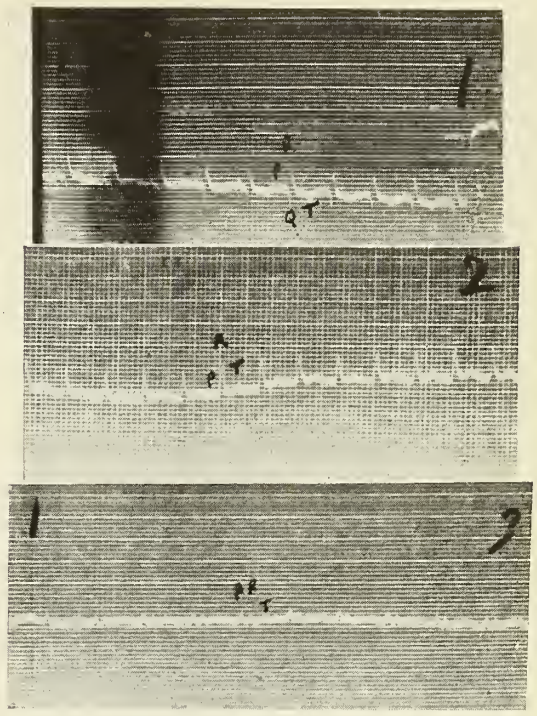

Fig. 4. Electrocardiogram of a cat, before injection of diphtheria toxin. Note the flat T in lead I and positive T in leads II and III.

This series is too small to permit of anything but some general conclusions. The number of cases of each disease does not warrant a statistical analysis for each infection. The group as a whole, however, serves fairly satisfactorily for comparison, as the severity of the infections was about the same. T wave inversion was present in four cases, an incidence of 13 per cent as compared with 47 per cent in the diphtheria group. Of the four instances of T inversion three were associated with rheumatic fever and one with pneumonia. All three rheumatic fever cases showed evidences of acute pericardial involvement. This is of interest since it is in the cases showing acute pericarditis that a pancarditis with definite myocardial involvement is to be expected. In two instances where subsequent records were possible the T inversion had disappeared at a later period. One case showing T_1 inversion in the acute attack was examined six years later, when the physical examination of the heart and the electrocardiogram were normal. The only other case of T inversion in this group occurred following pneumonia. The patient was suffering from cough and dyspnea three weeks after the onset and the *x*-ray examination showed evidence of delayed resolution in the lungs and some cardiac enlargement.

The electrocardiographic finding which was most frequent in this group was prolongation of the P-R interval, indicating delay in auriculoventricular conduction. This was present most often in the rheumatic fever cases but also occurred in pneumonia. This finding has been pointed out, especially in rheumatic fever, by Cohn and Swift, Rothschild and his associates and others. Hamburger has also observed P-R prolongation following influenza. In the present group it was noticed frequently in patients showing very mild evidence of toxemia. More than one-half of the cases in this series had normal electrocardiograms. Many of those showing a normal electrocardiogram presented circulatory symptoms and these were undoubtedly on a vasomotor basis. The incidence of myocardial involvement as indicated by the electrocardiograph during and following various infectious diseases can be arrived at only by a study of a much larger series of cases, a study which is at present in progress.

CONCLUSIONS

1. Electrocardiograms show evidence of myocardial involvement during and following acute infectious diseases.

2. T wave inversion is seen most frequently

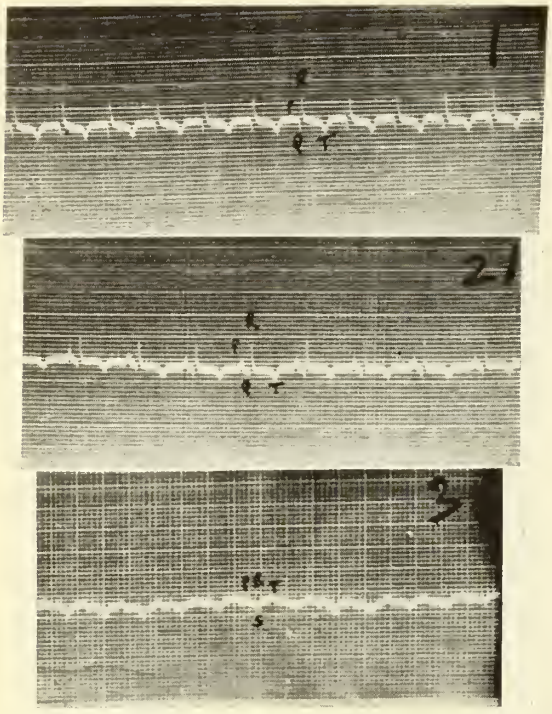

Fig. 5. Electrocardiogram of same cat as Fig. 4, 48 hours after injection of diphtheria toxin. Note deep inversion of T in leads I and II.

following diphtheria and indicates severe myocardial injury.

3. There is a later return to normal, indicating that the toxic effect on the heart muscle is a transient one.

4. In other infections, T inversion is found less often, while prolongation of the auriculoventricular conduction is a more frequent electrocardiographic abnormality.

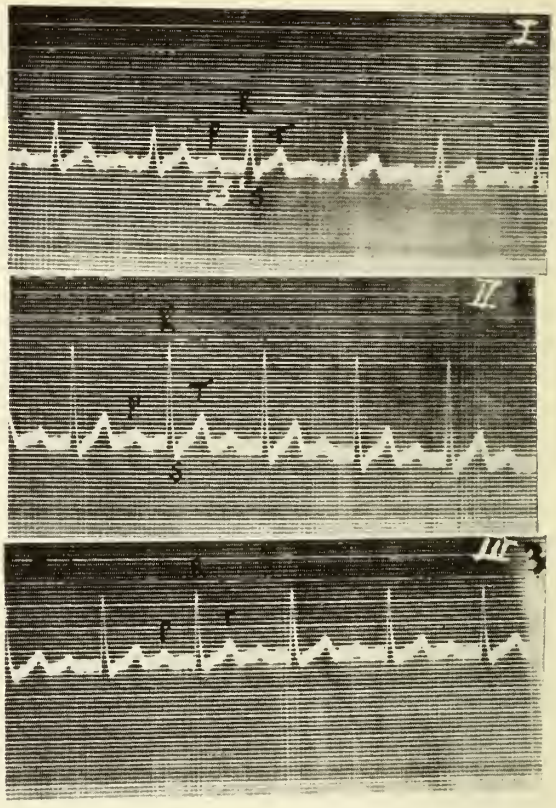

Fig. 6. Leads I, II and III from a case of rheumatic fever during convalescence. The P-R interval is .3 second (maximum normal is .2 second). This indicates delayed auriculo-ventricular conduction and is evidence of myocardial involvement.

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CALCIUM THERAPY IN FUNCTIONAL NERVOUS DISORDERS*

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DISEASES of the nervous system may be broadly differentiated as the organic, in which the disease symptoms are produced by a clearly demonstrable anatomical lesion, and the functional, in which no disturbance of anatomy is evident. This division of nervous diseases is by no means sharply defined. Bodily disturbances which we are prone to designate as functional, after a lapse of time often prove to be associated with anatomical changes; and frequently it is extremely difficult if not impossible to interpret all of the presenting symptoms and signs in the light of the existing pathological anatomy. The recent advances in physiology and the extension of physiological researches into the field of the pathological have demonstrated that anatomical disturbances in the organism may often be preceded by abnormal physiological processes. A consideration of etiology from the viewpoint of a disordered cellular physiology, molecular or ionic, may be of value in determining the causation of some of the so-called functional disorders. It is especially in this class of nervous disorders that the etiology has remained obscure, the treatment empirical and bizarre, and the prognosis discouraging.

The neurotic patient is with us always; not the same patient to be sure, because he soon tires of our rather ineffective therapeutics and travels to more distant fields where the grass appears more green and the prospects for relief of his varied complaints more hopeful. The train of symptoms presented by these patients we have memorized from hearing them repeatedly: nervousness, excitability, easy fatigue, apprehension, frequent headaches, perhaps insomnia, usually accompanied by minor symptoms referable to any of the various organs. All gradations of these symptoms present themselves, their severity ranging from normal mental health on the one hand to outspoken mental disease. All or some of the presenting symptoms may be the expression of early organic disease such as larval hyperthyroidism, incipient tuberculosis, chronic sepsis of periapical, tonsillar or para-nasal sinus origin, Addison's disease, diabetes, uremia, or the early stages of organic disease of the central nervous system. These conditions must first be excluded by careful general physical examination with all the laboratory aids at our command before we can arrive at a diagnosis of a functional nervous disorder. In this last condition gross anatomical change is predominantly lacking and in the neuroses the changes in the cells, if such exist, are so slight that they are not demonstrable by the means at present at our disposal. Having excluded the presence of organic disease, how may we explain the behavior of these individuals?

I shall not attempt in such a short discussion of this subject to enumerate any of the theories explaining the causation and development of the functional nervous disorders. Suffice it to say that they are many in number, widely separated in their nature, and no one theory has been universally accepted. In a consideration of the etiology of the functional nervous disorders a study of the normal irritability of the living cell and the changes produced in that cell by chemical alterations of its environment may give us some insight into these conditions in which the irritability of the organism as a whole is so profoundly disturbed.

The normal cell irritability is dependent, among other factors, upon a balance of certain ions in the vital fluids. An increase of sodium, potassium or hydroxyl ions, or a decrease of calcium, magnesium or hydrogen ions leads to a heightened irritability of living tissue. Any disruption of the normal balance of these ions exerts a profound influence on cellular and animal behavior. The hyperexcitability of the neuromuscular apparatus as evidenced by tetany after feeding or injecting large doses of sodium or potassium phosphate or of sodium bicarbonate or carbonate, demonstrates easily the effect of these ions upon general cellular irritability. A lowering of the serum calcium such as is encountered in parathyroid deficiency, where the calcium content may fall as low as 4 mg. per 100 c.c., has an effect very similar to that produced by elevating the sodium or potassium concentration. The more recent use of solutions of the magnesium salts in the control of the convulsions of eclampsia gives us an excellent illus-

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tration of the effect of the magnesium ion in depressing nervous irritability.

The beneficial effect of calcium feeding or injection in conditions where the serum calcium is lowered, has been utilized by pediatrists in many of the tetanies of infancy and childhood. In rickets with tetany and in most of the other infantile tetanies the serum calcium is decreased, frequently to 5 or 6 mg. per 100 c.c. The sodium and magnesium serum concentrations appear to remain normal, while the potassium ions may be slightly increased. In these conditions the administration of calcium or magnesium salts has proved temporarily beneficial; or a similar effect may be accomplished by producing a mild artificial acidosis by feeding hydrochloric acid milk or ammonium chloride. Serum calcium levels may also be raised indirectly by feeding cod liver oil or by exposure of the patient to ultraviolet radiation. In other conditions associated with low serum calcium values, the level of calcium may be raised by injections of the lately discovered parathyroid hormone.

When calcium salts are administered orally or given intravenously, there is a transient elevation of the serum calcium level. Recent studies in calcium administration have shown that a single large dose of calcium lactate administered orally to normal dogs raises the blood calcium by 3 or 4 mg. per 100 c.c. for three or four hours. When similar doses are administered to parathyroidectomized dogs the serum calcium is raised above the danger point for a correspondingly short period. Other calcium salts appear to be equally effective, but when heavy doses of calcium chloride were administered, vomiting ensued. Continued excessive calcium admistration to normal animals is followed by loss of tonus and later paralysis. Lemiere in 1922 reported a curious result of prolonged administration of calcium chloride to a healthy man on a salt-free diet. After a time the individual lost weight, and became depressed both physically and mentally. As the result of replacement of the calcium chloride with sodium chloride the man became unusually exhilarated and was "salt drunk" for two days. Moderate doses of calcium salts appear to be tolerated by the body almost indefinitely with no apparent adverse results.

On the other hand animal experiments in calcium starvation have shown some very interesting facts. Animals kept on a low calcium diet after a period of time become easily excitable, nervous, restless and more apprehensive than the normal animal. The animal behavior is rapidly brought back to normal by calcium administration.

Because of the close similarity of the symptoms and behavior of animals during calcium starvation to some of the symptoms presented by patients suffering from the less severe functional nervous disorders, it seemed to me that the symptoms presented by these patients might be the expression of a disturbed kationic ratio with its resulting effect on general cellular irritability and more particularly of a lowered calcium retention; and that calcium feeding in this class of cases might show some interesting results. No determination of the serum calcium in these cases has been made, and it is probable that any variation which might be observed by the present methods for calcium determination would fall well within the fluctuation of the normal levels.

In all, eighteen patients have been placed on prolonged calcium administration lasting from three to six months. Each of these patients was first given a thorough general physical examination with careful laboratory studies to rule out any evidence of organic disease. They were kept as nearly as possible to their former mode of living and were placed on no other medication. Calcium was administered orally, each patient receiving the equivalent of 20 grains of calcium lactate four times daily. One patient was given calcium chloride intravenously but this was discontinued because the effect produced appeared to be no more beneficial than that produced by calcium feeding.

The results of treatment were quite uniform. Within twenty-four to forty-eight hours the patient experiences a feeling of mental well-being, the nervousness and apprehension disappear, and the feeling of fatigue so commonly complained of is replaced by a sensation of physical fitness. In most of these patients the appetite was improved, and they were able to sleep better than they had for a long time. Four of these patients who had suffered from frequent dull occipital headaches stated that they had no recurrence while on calcium medication. This observation is quite in accord with those of Riggs in the treatment of migraine with calcium feedings. In one patient the blood pressure which on numerous occasions over a period of two years had remained about 98 mm. Hg. systolic for no apparent reason, on calcium feeding rose

in the course of eight days to 122 mm. Hg. and has remained at that level even though calcium administration has been discontinued.

The effect of ultra-violet light, cod liver oil or parathyroid feeding which produce an elevation of serum calcium, has not been studied in this series of cases. Every effort has been made to observe the results of calcium administration uninterfered with by other factors. While a similar effect would undoubtedly be produced by ultra-violet radiation, this phase was not investigated.

A detailed report of two of the cases which are fairly typical of this group follows:

Case 1.—The patient, a married woman aged 41, complained of not feeling well for a number of years. Her present symptoms are faintness, numbness of the hands and feet, frequent dull headaches occurring at any hour of the day unaccompanied by vomiting, and a general feeling of exhaustion. She has always been emotionally unstable and moderate exertion has been followed usually by a period of high nervous excitation, insomnia, faintness and apprehension, resulting in general exhaustion. She has consulted numerous physicians and clinics and has always been told that she has no organic disorder. The usual treatment of enforced rest periods, high caloric feeding, and tonic medication has been prescribed repeatedly. In 1922 she was ordered to bed for four weeks because of a "nervous breakdown" from which she has never recovered.

Physical examination showed a patient slightly above average weight, with flabby muscular development, irritable, and restless. The pulse was 85 and soft. Otherwise the physical examination was negative. Blood Wassermann was negative, blood and urine normal. Hemoglobin 85 per cent, blood pressure 105/72. Roentgenograms of the teeth and chest were negative. The basal metabolic rate with the Benedict-Roth apparatus was +6 and +3. The pupillary and other reflexes were normal.

This patient was placed on calcium medication the equivalent of 20 grains of calcium lactate four times daily. After three days she reported that she had not felt so well in years. This medication was continued for six months, during which time she attended her household and social duties, which were heavy, with no inconvenience. At the end of six months all calcium medication was discontinued. She reports at present that she is still physically and mentally well, but that occasionally following an unusual emotional or mental strain she voluntarily returns to calcium medication with complete relief.

Case 2.—This patient, aged 18, has always been a nervous and excitable girl. She was by nature a reticent individual and avoided company or crowds because of resulting mental excitation. On exertion she was easily exhausted and had frequent occipital headaches. Since the age of twelve years she has complained of indefinite pains in various parts of the body, occurring most frequently in the legs and ankles. This condition was diagnosed as rheumatic in 1923 and tonsillectomy was performed with no relief. One year later three uneruptcd last molars were removed for a similar reason but with no relief. At about the age of fourteen she developed a symmetrical enlargement of the thyroid gland which has persisted. Menstruation began at fourteen years of age, is of the twenty-eight day type, lasting three days with no unusual discomfort. In 1925 she entered a metropolitan hospital for nurse's training but was advised to discontinue this work four months later because of arthritis of the ankles and a toxic goiter. She was later seen by one of the larger clinics where her metabolic rate was found to be normal. She was then advised that she had no organic disorder and was placed on the usual treatment of rest, fresh air and sedatives. When first seen by me she was very much discouraged with the general outlook.

Physical examination revealed a girl of good physique but of sallow complexion, very nervous and easily excited. Pulse 92, temperature 98.6. Blood Wassermann was negative, blood and urine normal. General physical examination failed to reveal any evidence of organic disease except a symmetrical enlargement of the thyroid and a heart which was easily accelerated by excitement. Roentgenograms of the teeth, chest and ankles were negative. The basal metabolic rate as determined by the Benedict-Roth apparatus was +8, +4, and +7 respectively.

This patient was placed on calcium medication the equivalent of 20 grains of calcium lactate four times daily. One week later her mother informed me that the general condition of the girl was changed completely. When seen in the office one month later a marked improvement in her mental state was readily apparent. She stated that the pains in the legs and ankles and the headaches had disappeared during the first week of treatment and have not recurred. Her appetite and complexion were improved. She was kept on calcium medication for six months, at the end of which time the dosage was reduced to the equivalent of 20 grains of calcium lactate every morning and evening. She has remained well to date and contemplates resuming her nursing training in the fall.

From this series of cases it appears that there may be a more or less direct relationship between the functional nervous disorders and calcium metabolism. No claim is made for calcium medication as a panacea in the neuroses, and it is doubtful that calcium therapy in the more severe forms of the neurasthenias and psychasthenias will produce as encouraging results. We cannot expect a biologically inferior organism or one which has never been able to make any adjustment to its environment to be brought into equilibrium with his fellows so easily. On the other hand, in the milder neuroses these cases demonstrate, I believe, rather clearly that a serious consideration of the calcium metabolism may be of definite value.

THE TREATMENT OF CEREBRAL PARALYSES AND SPASTIC PARAPLEGIAS*

STUDIES IN RECONSTRUCTIVE SURGERY

HARRY E. MOCK, M.D., and JOHN S. COULTER, M.D.
Chicago

RECONSTRUCTIVE surgery is the application of usual surgical procedures combined with certain adjuncts referred to as physiotherapy (massage, muscle training exercise, gymnastics, mechanotherapy, electrotherapy and hydrotherapy) and occupational therapy (bedside, ward and workshop occupations) used for diversional or purposeful objects, and the personal supervision of the application of all these adjuncts by the surgeon until the functional restoration of his patient is assured as far as is humanly possible.

Reconstructive methods have made rapid advancement since the war period, due to the wide dissemination of knowledge to both the profession and the public at that time, concerning the possibilities of functional restoration of chronically disabled individuals. Seldom is an address made in any city, town or village on the subject of Rehabilitation of the Disabled that is not followed by one or more consultations with a physician who presents some permanently disabled patient, usually an impoverished individual, seeking the means of a possible functional restoration. Too often the individual has been disabled for years, this is the cause of his impoverishment, and both patient and physician have long since become pathetically satisfied with the hopelessness of his condition. Even when reconstructive surgery can offer no improvement, yet a spark of hope has been engendered which can be taken advantage of by pointing out the possibilities of utilizing his remaining members or his brain to greater purpose for the improvement of his social status.

This is rehabilitation. The reconstructive surgeon to be successful must know rehabilitation laws and methods. It is surprising, to those who have not followed this work, the increasing number of the above type of patients who are being rehabilitated throughout the country.

We have been impressed, especially in the smaller communities, with the number of paralytic cases among children and young adults who have gone untreated for years. We have found cases of cerebral paralyses, with paraplegias, who have never walked, one of these as old as twenty-one years, and two who had reached the ages of fourteen, in addition to others ranging from infancy to the age of twelve, who were still being carried in their mothers' arms. Cases of monoplegia, hemiplegia, diplegia from congenital or acquired causes, of infantile paralysis and of epilepsy make up a great number of the disability conditions presented for reconstructive methods. It is safe to say that in almost every community of the land there is at least one individual thus afflicted and too often no effort at improvement is being made in his behalf.

This paper will present no new measures of orthopedic or brain surgery. It will throw no scientific light on the cause of these obscure pathological conditions. It will, however, strive logically to show the large number of these cases still untreated; the great value of a searching examination of all such individuals in order to find the few that can be treated by a definite surgical procedure, and to emphasize the importance of a well defined program of physical and mental education with a view of giving a large majority of these patients a chance for their proper status in the economic world.

During the last ten years the authors have had a large number of instances where the combined use of surgery and physiotherapy have given some excellent results viewed in comparison to the pitiable condition of these patients before treatment was instituted.

The following case reports illustrate the nature of the disability and the forms of treatment adopted:

Case 1.—R. W., aged 13, suffered a serious illness when six months of age. He had been a well developed, normal baby, kicking his legs about as well as any baby of that age. The illness was called inflammation of the bowels. Following the illness, however, the

*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

mother noticed that both legs were paralyzed. Ralph was unable to move his lower extremities as he grew older and therefore his brothers made him a little wagon in which he could ride—also a chair with wheels which he could use in the house. As he grew older he sat in his chair or wagon with his thighs flexed on the abdomen and his lower legs drawn up under the thighs. Naturally, in time the lower extremities became fixed in these positions. The boy finished grade school, sitting in his little wagon, which was taken into the school house. The Kiwanis Club of Muncie, Ind., then became interested in the case and arranged to take the boy in some member's auto to high school every morning, and another member would drive him home in the evening. The principal arranged a desk on wheels and in this way Ralph was able to continue his education.

At the end of his freshman year he was sent to St. Luke's Hospital in Chicago to see if the legs could be straightened. One of the authors (Mock) performed a Soutter's operation on each thigh, lowering the anterior-superior spine of the ilium with muscle and fascia attachments intact, thereby enabling the straightening of the flexed thighs. The contracted hamstring muscles and the tense fascia in each popliteal space were then severed and the flexed, deformed lower extremities were thereby straightened. Plaster of Paris cast from lower abdomen to toes was then applied in order to maintain the corrected position. At the end of six weeks the casts were changed to splints in order to allow massage and a certain amount of muscle training exercise. Following the removal of the splints at the end of ten weeks, physical therapy became the chief form of treatment. Massage, hydrotherapy and muscle training exercises were used and by the end of three months this boy was being taught the use of crutches. Muscle training exercises were continued after he returned home. A suitable brace was made to hold the paralyzed lower extremities in the corrected position and to enable him to bear some weight on his legs.

This boy graduated from high school this year. He has been working evenings and Saturdays the last year as a salesman and has driven his own Ford to and from school and in his work. He has grown in stature so that today his original crutches made three years ago now reach only to the hand grips of his present crutches.

A case almost identical to the above was referred by Dr. E. G. Wilson, of Kankakee, Ill.

Case 2.—A boy of ten was carried into Dr. Mock's clinic by his mother. He had never walked. The condition seemed to be one of spastic paraplegia without any marked mental disturbances. A Soutter operation was performed and the tendons in the popliteal space and the Achilles tendons were all lengthened, thereby overcoming the deformities. First, plaster of Paris casts followed by suitable braces were used. A prolonged course of massage, muscle training exercises and physical therapy followed the surgical procedure and resulted in enabling this boy to go about on crutches and carry on much the same as a normal boy would in his school work and ordinary duties.

Case 3.—D. R., is a male, American, twenty-five years old with a spastic paraplegia, the oldest of thirteen children, five now living. His father was killed seventeen years ago. Three years ago the mother became paralyzed. This boy had never worked because of the halt in his walk and his defective speech; he had never been given a chance. The Service League referred him to Dr. N. C. Gilbert, who recommended work and speech training. The boy worked for three month in occupational therapy rug weaving, and there is at least 30 per cent improvement in his hands, and his speech is greatly improved. His present earning capacity is $12.00 per week.

Case 4.—F. D., female, aged 15, fell from a third story window when eight months of age. She sustained a serious skull fracture which was treated non-surgically. As a result she had a complete right sided hemiplegia. As the years went by, the right arm and leg developed but less so than the left. The right arm showed a definite spasticity at times and was held in a flexed, pronated position. Several operations had been performed on the tendons of the right foot to correct the valgus position. At the age of thirteen, she had an attack resembling a Jacksonian epilepsy which began in the foot and extended up the leg. These attacks increased in frequency and severity and at the age of fifteen were also involving the arm. There was no definite loss of consciousness. The attacks always occurred at night except once when she fell in an attack at school. In January, 1923, the patient was referred to Dr. Mock by Dr. Loren Dewey of Okanogan, Washington. An *x*-ray examination revealed a fragment of bone broken completely from the inner plate of the skull and lying in the brain cortex about two inches from the surface of the brain. The case was operated and the fragment of bone, $2 \times 1 \times .25$ cm., lying in a small cystic cavity just anterior to the left fissure of Rolando, was removed. Patient made an excellent recovery. Patient was referred three months later to Dr. Coulter for physiotherapy. For two years she has had muscle re-education along the lines to be described in detail later, and her high school has assisted and coöperated in giving her swimming lessons. This patient, who is now nineteen years of age, has not had an attack of Jacksonian epilepsy since the operation, except an occasional slight twitching of the foot the first year after operation. The spasticity has left her arm and she walks much better than previously. By the continued muscle training exercises and development of her leg muscles she has been able to discard the brace which she has been forced to wear all her life.

Case 5.—F. B., male, aged 19, was employed in a printing establishment. In April, 1925, while leaning over he was struck between the shoulders by a heavy roll of paper which fell from a height. He was doubled over, giving a jackknife flexion to the back. He was brought immediately to St. Luke's Hospital and examined by Dr. Mock and Dr. Geo. Hall, the neurolo-

gist. Complete paralysis of both lower extremities was present with absence of reflexes and sensation.

X-ray examination showed a fracture of the lamina of the first lumbar, a marked compression fracture of the body of the second lumbar, fractures of both transverse processes of the second lumbar and a backward displacement of the second lumbar vertebra upon the first. An immediate laminectomy was deemed advisable, and was performed within three hours after the accident. The following condition was found:

The left lamina of the first lumbar vertebra was splintered and crushed down upon the cord. There was a small splinter of bone transfixing the cord in the left lateral tract. The second lumbar vertebra was broken completely through the body and the body was shoved backward so as to cause pressure upon the cord. The laminæ of the first and second dumbar vertebræ were removed and whereas the cord, on first being exposed, was found not to pulsate, pulsation gradually returned in the cord.

The foot drop so prone to occur in this type of paralysis was prevented by immediate splinting. All other deformities were counteracted by splinting. Massage and muscle training exercises were started early. The patient was given bedside occupations and five months later was able to go to the occupational therapy workshops, where he learned to work the pedals of a jig saw and to pedal a stationary bicycle. On discharge from the hospital he was referred to the physiotherapy laboratory, where he still goes for treatment. This treatment follows the principles described later in this paper.

He is now able to walk without a cane although he carries a cane to aid in the rapidity of his walk. He is going to business college, an opportunity offered to him by the State Vocational Rehabilitation Department. He will always have signs of some paralysis in his lower extremities but he is an outstanding example of the value of the combined surgical and physiotherapy treatment.

In the physical treatment of these cases of spastic paralysis there are several points to be emphasized. The first and most important is that physiotherapy should be started as early as possible, and this means as soon as the shock of the injury has subsided and the general condition of the patient will permit. This will avoid the necessity of correcting many deformities.

The aid of the patient and his family must be enlisted and they must thoroughly understand that the important part of the treatment is the patient's coöperation to reëstablish communication between the damaged brain or spinal cord and the healthy muscles. They must be taught early to keep the helpless limb from assuming a fixed position, and the physician must keep the limb from developing arthritic and muscular contractures.

The positions naturally developed in a spastic limb must be remembered so as to prevent them by frequent changing to the opposite positions, and by the use of pillows, sand bags, exercises and the judicious use of splints. The spastic muscles of the arm are commonly the adductors and internal rotators of the shoulder, the flexors of the elbow, the pronators of the forearm, and the flexors of the wrist, fingers and thumb; and in the leg the extensors, adductors and internal rotators of the hip, the extensors of the knee and the plantar flexors and invertors of the foot.

The leg muscles recover first, then the arm and last the muscles of the hand.

If splints are used in these cases remember that the main object is to establish motion and not simply to prevent contractures, so that the splints must be removed frequently and much harm can be done by oversplinting.

In our physical therapy clinic on the first visit of the cases the patient, a member of his family, the physician and the physiotherapy technician have a conference and the following points are carefully considered:

1. The patient and his family are instructed to have him make an effort to correctly move each joint about four times a day. If the joint only moves slightly the patient should be assisted through the full movement.

2. The patient must make a mental effort to move the joint while the physical movement is being carried out, so these movements should be performed seriously in a quiet room with only one member of the family present to assist.

3. As one joint recovers, the tendency to devote all the energy and time to this motion must be discouraged and an equal time given to trying with all joints.

4. Massage is useful to promote the flow of lymph and blood in the lymphatics and veins and thus remove the waste products, and also to maintain the muscle tone by stimulation of the arterioles. These have unstriped muscle in their walls and can be paralyzed by over-handling, just as the intestines can. Therefore only the most gentle massage must be given.

5. Sometimes active movements of muscles can be started by electrical muscle stimulation, but apart from this electricity is not often indicated as it increases reflex spasm and the nutrition and functional activity of the muscles are not affected as in peripheral nerve lesions.

6. Forcible stretching of the spastic muscles is contraindicated because it increases the spasticity.

7. Avoid bad habits in walking. The patient should constantly be instructed not to move his leg by circumduction at the hip, but by flexion of the thigh and the knee.

8. In cerebral paralysis it must be remembered that there is an inability to perform certain movements and not a paralysis of individual muscles.

9. Reëducation of muscles is a combination of muscle rest and muscle action. Too much work causes fatigue, which is harmful, so the work must be accurately prescribed, trying to increase the amount each day.

10. Coördination exercises should be started early, and coördination of the proximal joints should be secured before the distal are tried.

11. Patients must be taught not to keep their attention entirely on the paralyzed limb. Therefore they should be taught to do their exercises with both limbs at the same time.

Case 6.—J. E. H., a male, aged 40, was referred by Dr. Vandeventer, Ishpeming, Mich., and Dr. Yates of Milwaukee, with a history that on May 14, 1926, he was struck on the left side of the head by a rock, suffering a skull fracture with immediate loss of speech and complete paralysis of the right side. He was operated immediately after the accident and two days later by Dr. Yates, Milwaukee, Wis., and there is a cranial defect of an area 2 inches in diameter of the left parietal. There was inability to void for ten days, but the bowels were not disturbed. Vision, hearing, taste and smell were not disturbed. He was unable to walk until July 1.

In this treatment the above points were first gone over. He and his wife stayed in Chicago for one week during the first month. Before his exercises were started, radiant heat was applied for about fifteen minutes to his leg, followed by gentle massage and stretching movements, to relieve the spasticity. He was then taught to walk, raising the knees and dorsally flexing the ankle and foot turned out. This was watched carefully. He was then taught to step over books of increasing thickness. After this he was again placed under the radiant heat over the arm and after fifteen minutes of this, gentle massage of the arm was given. He could not abduct his arm at the shoulder, so an overhead pulley was rigged up with a weight on it which helped him to do this and the weight was gradually decreased as he improved. He was taught to move one joint at a time correctly with the other muscles contracted. When he moved his elbow he was allowed at first to have his wrist and fingers flexed. Later when he moved the elbow, the forearm was held supinated and the wrist and fingers moderately extended. One joint was first controlled, then two, and finally the whole arm. To follow one of the principles of using both limbs at once we used a broomstick exercise. At first the stick was grasped with both hands so the sound arm could assist and move the hands further apart as the arm progressed. Also at first the forearms were pronated, as this is the natural position for them, and later supinated. The exercise is to raise the arms above the head with elbows extended and elbow flexion and extension.

This man made three visits of about three days each the second month, two visits the third month, and one visit each in the fourth, fifth, sixth and seventh months. He is slowly progressing, the hand being, as usual, the last to recover.

Formal exercises in these cases have the advantage of isolating particular joints and allow for repeated exercises under controlled conditions for limited periods of time. The disadvantages are that the human body is more than a machine when voluntary movements are concerned and the formal repetition of a movement is not of maximum therapeutic value in increasing the amount of movement in the affected part or in making it of use as an integral part of a larger coördinated movement of which each movement must ultimately be an essential part. Therefore curative occupational therapy is based on the fact that the best remedial exercise is one that requires a series of voluntary movements such as are involved in the ordinary occupations. These movements have the advantage of being initiated by the patient and forming a necessary part of a larger and more complex series of coordinated movements. There is also an incentive in the purposive nature of the work that is absent in ordinary exercise. In these cases much can be accomplished by various forms of carpentry, and in this case sawing was used for elbow flexion and extension, and holding the board to be planed or sawed was used for extension and abduction of the thumb.

CONCLUSIONS

These few cases serve to illustrate that there are many self-pitying, dependent cripples who with the proper combination of surgery and physical therapy could be made into self-reliant, independent citizens.

The personal supervision of the surgeon and his coöperation with the physical therapy department until the functional restoration of his pa-

tient is assured as far as possible will prevent many disabilities.

In these spastic paralysis cases it is not the surgeon who cures the patient, he can only make the cure possible; nor the physiotherapist, he can only direct the patient; but it is the mental effort of the patient, which results in a cure after proper surgery and proper physical therapy.

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EDITORIAL

Advance in Thoracic Surgery

The interest in thoracic surgery in America began about twenty years ago. The impetus was the advent of apparatus for differential pressure. The specially built chamber for differential pressure, later supplanted by the intratracheal insufflation method, removed the great obstacle to successful surgery. Removal of tumors of the chest-wall involving the pleura, tumors of the lung and the mediastinum, and resection of the intrathoracic part of the esophagus for carcinoma have been done with success. The surgery of the heart has awakened new interest, thus valvotomy has been performed in case of mitral stenosis with improvement of the patient, cardiolysis for adherent pericardium has been performed and several cases of suppurative pericarditis have been cured by drainage.

Hippocrates treated empyema of the pleural cavity by incision and drainage and the same principle is in vogue at the present time. The use of air-tight drainage in acute streptococcus empyema is a step forward. Conservatism in the treatment of abscess of the lung is the tendency of today, as the operative mortality in the acute stage is high. In a considerable number of cases the abscess breaks into a bronchus and heals by rest and postural drainage. Where thoracotomy for drainage is required this can more safely be done a few weeks after the acute onset, when the patient is in a better condition and the abscess is walled off; on the other hand the operation must not be postponed until the wall of the abscess has become fibrous and hard. A two-stage operation is performed if pleural adhesions have not formed. If an abscess of the lung breaks into the pleural cavity, drainage of the latter should be instituted as soon as possible. Such treatment was practiced by Hippocrates and it is in vogue today. In the treatment of bronchiectasis, various surgical measures have been tried. The ideal operation, by lobectomy, has at present a high mortality. The graded cautery lobectomy, in a series of forty-five cases, has shown freedom from symptoms in 69 per cent. Another method, by which the diseased lobe is delivered, sutured to the musculature in the incision, allowing nature to destroy it by necrosis, is still on trial. Following the "graded extrapleural thoracoplasty," preceded by phrenicoexeresis, a number of cases have been reported improved and some have been entirely free from cough and sputum. Mediastinal infection and suppuration has received more attention of late years and a little more clarity from an anatomicopathologic standpoint has been gained.

A number of cases successfully operated upon have been reported. The surgical treatment of pulmonary tuberculosis by paravertebral thoracoplasty, although adopted relatively late in this country, has rapidly gained in favor and has shown good results. Where complete collapse of a cavity has not been obtained, after the paravertebral thoracoplasty, apicolysis by transplanting fat or muscle to compress the lung, or further removal of ribs anteriorly have been tried. Progress has been made in thoracic surgery. More rapid progress may be expected with a closer coöperation between the internist, the surgeon, the radiologist and the endoscopist, as thereby earlier diagnosis will be made with better prospects of cure of the patient.

W. L.

Superior National Forest

Those who believe in the necessity of recreation and those who love Nature, read on. Others need not. That physicians as a rule appreciate outdoor sport is indicated by the large number who not only spend their vacations in the wilds, fishing, hunting or canoeing, but also advise their patients to do the same.

Anyone who has visited the northeastern corner of our state knows what a beautiful part of the state it is. The rocky ground, rivers and lakes clear as crystal and the vegetation limited for the most part to spruce and pine, render this part of the state ideal for fish and game and particularly for man's relaxation. Notwithstanding the fact that the original pine of this region has long ago been cut, the second growth has rendered the country attractive in every way. The present generation can only speculate as to how this wild country must have appeared with its forest giants, the results of a century or a century and a half of growth. President Roosevelt realized the value of this wild region when he approved the establishment of the reservation known as Superior National Forest at the same time that a similar reservation, Quetico Park, was set aside just over the Canadian border in Ontario.

And now comes a proposition, initiated a couple of years back and at present being investigated by an international commission, to establish a series of dams in the series of lakes and rivers forming the international boundary between Ontario and Minnesota from a point about forty miles west of Lake Superior and extending to Rainy Lake. The purpose is to control the huge volume of water in this basin by damming the lakes in order to provide a more constant flow for power plants on the Rainy and St. Francis rivers.

Why should such a project be opposed? The main reason is that the Superior National Forest has been set aside for a state and national playground and the project will ruin a great part of this area for any such purpose. Raising the water in this long chain of lakes anywhere from one to sixteen feet (and one proposed dam is to be some eighty feet high) will kill the timber on the shores of the lakes, and the dead trees will give an air of desolation to the region for years to come, as anyone who has seen the results of raising a lake level, Lake Winnibigoshish, for example, will agree. It does not require a lively imagination to picture the devastated appearance of these lakes as seen from the water with the shores fringed to a greater or less degree by dead standing or fallen timber. Lowering the lake levels in time of drought, as is proposed, to supply a more even flow to the power plants, will reduce and in some regions perhaps exterminate the fish, particularly the whitefish and trout, through the destruction of the fish eggs deposited near the shore. Islands and mainland will be inundated to varying degrees and endless suits for property damage are sure to result.

Is the development of this additional power, which we are informed will largely be used in Canada and the sum total of which is rather insignificant compared with other sources, worth the price, which will be the ruination of this ideal playground for the present and future generations?

The Hospital Library and Service Bureau

The modern hospital is an outgrowth of a realization of the important part played by the institution in the lives of every one of us. Every physician is to a certain degree interested in one or more such institutions from the professional standpoint particularly. Few are the family units which do not at some time or other require the services of a hospital and only too often in a crisis. A realization of the importance of having hospitals well constructed, equipped and managed has gradually dawned upon the public at large.

In the interests of better hospital service in general there was established in Chicago in 1920, through the financial assistance of the Rockefeller Foundation, a Hospital Library and Service Bureau as a part of the American Conference on Hospital Service (an organization consisting of some twenty national associations in the hospital and health fields). Later, additional funds were supplied by the Carnegie Corporation and the Commonwealth Fund. The Bureau has also received from time to time donations from various associations and individuals interested in hospitals. Service is rendered entirely gratis to anyone active in hospital or public health work, whether a member of one of the component associations or not.

The Bureau has several departments. Information (not advice) is furnished on a great

variety of subjects relating to hospitals in general. The department of Hospital Construction has a file of the architects' plans of several hundred institutions which are at the disposal of trustees contemplating the construction of a hospital or addition. The reference library contains a most complete collection of hospital literature and a circulating library consisting of some 3,000 so-called package libraries. Bibliographies are also furnished upon request.

Those who saw the exhibit of the Bureau at the recent convention of the American Hospital Association in Minneapolis can better appreciate the scope of the work conducted by the Bureau. We are glad to give further publicity to this recent undertaking founded in the interests of better hospitals. Those seeking hospital information of any sort should address the Hospital Library and Service Bureau, 18 East Division Street, Chicago.

Christmas Seals

In the multitude of thoughtful and helpful customs there is none more in keeping with the true spirit of Christmas than the purchase and use of tuberculosis Christmas Seals.

Inch by inch that age-old enemy—the dread White Plague, which the penny seals fight, is retreating. For centuries the first cause of death, it is now the fifth. Within a decade the death rate has been cut in half. Last year alone, it is estimated that over 1,300 lives were saved in Minnesota.

It is not only on tuberculosis that this remarkable campaign has had its effect. Since the first effort to teach people to sleep with their windows open and to avoid the common drinking cup down to the present day, when periodic medical examinations are being urged for all, the anti-tuberculosis program has led in virtually every effort to promote health. In fighting tuberculosis, every other disease has been fought, and the span of life has been increased.

But tuberculosis is still a powerful enemy. In the past ten years its victims in Minnesota have numbered over 22,000. Last year alone it killed 1,686 men, women and children of our State.

Once each year every person has a chance to aid in the Crusade to rid the nation of the greatest of all plagues by the purchase of Christmas Seals. This is a simple little action, neither expensive nor difficult, yet it returns dividends a thousand fold. Buy two of the gay little health seals in this sale for every one you purchased last year.

OBITUARY

Dr. Nellie S. Shulean

Dr. Nellie S. Shulean, 63 years old, one of the first women doctors in Minnesota and the first licensed doctor in Isanti county, died Saturday, October 22, at her home in Cambridge, Minn. She had been ill only a short time.

Dr. Shulean began practice 40 years ago at Cambridge, at a time when she had to minister to the whole countryside and often had to be druggist as well as doctor, making her own medicines.

Just as any man in the medical profession, Dr. Shulean went out in her horse and buggy in all kinds of weather, snowstorms, rain or sunshine, and by day or night to aid the sick.

This willingness to go where she was needed gained many friends, not only in Isanti county, where she lived, but in Kanabec, Anoka and Chisago counties as well.

Born in Cambridge, Dr. Shulean received her primary and high school education there and took a course in medicine at the University of Minnesota. After graduation she practiced in Cambridge but transferred her practice to Minneapolis for a period of 10 years and then went back to her home town.

The past two years she was resident physician at the state hospital for the insane at Somerset, Pa., giving up that position a month ago because of ill health. She returned home after leaving Pennsylvania.

Besides her regular practice, Dr. Shulean was known for her charity work and rehabilitation of girls. She was active in the Red Cross during the World war.

She was a member of the American Medical Association, the Medical Women's National Association and was a charter member of the Cambridge lodge of the Eastern Star.

Surviving her are one sister, Mrs. Isabel Rice of Cambridge, and three brothers, William and Frank Shulean of Cambridge and Andrew Shulean of Minneapolis. She was unmarried.

Dr. Reuben D. Zimbeck

Dr. Reuben D. Zimbeck, a practicing physician in Minnesota for the past forty years, died at his home in Maynard, Minnesota, Wednesday, November 2, 1927.

Reuben D. Zimbeck was born at Sharon, Wis., April 23, 1857. He spent his boyhood and early manhood at Sharon, receiving his early education in the schools of that place. He graduated from the college at Carthage, Ill., took a course of two years at the University of Iowa and completed the medical course at Rush Medical School of Chicago, receiving his final degree as Medical Doctor in 1885. In 1886 he began the practice of his profession at Morton, Minnesota, continuing

there for four years. In 1890 he removed to Montevideo. He came to Maynard in the spring of 1915.

Since coming to Chippewa county thirty-seven years ago Dr. Zimbeck had been identified consistently with every public movement for the betterment of the community in which he lived. Perhaps his greatest achievements in a public way were made while a resident of the county seat at Montevideo. He served two terms as a member of the village council, one term as president. At the election of 1897 when he was made the president he received 292 votes out of a possible 295, which was an indication of the value which his fellow townsmen placed on his services to the town. He served as health officer in Montevideo for fifteen years and as county coroner for twelve years. He was an active member of the county and state medical societies and of the Odd Fellows, Workmen, Woodmen and Eagle Lodges.

As a physician Dr. Zimbeck was held in high esteem by members of his profession. As a student of modern medicine and methods Dr. Zimbeck was considered as having no superior among the older practitioners.

Dr. E. M. Clay

Dr. E. M. Clay, practicing physician in Renville county for more than 30 years, died suddenly Friday, November 4, at Olivia. He had left his home in Hutchinson earlier in the day to attend the funeral of Dr. Zimbeck at Maynard and came to Olivia to join Dr. Mesker on the trip from there. The train had stopped at Olivia and Dr. Clay, who up to that time had been apparently well, conversing with friends on the way, arose to put on his top coat when suddenly he fell over and expired immediately, presumably from heart trouble.

Edward M. Clay was born in Oronoco, Olmsted County, Minn., March 2, 1866. In 1884 the family moved to Hutchinson and three years later, in 1887, Dr. Clay went to Renville where he took the position of editor on a local newspaper, known as the Renville Weekly. He continued to edit this paper until 1889, when he took up the study of medicine at the medical college in Minneapolis, completing the course in 1893. He then returned to Renville and engaged in the practice of medicine, remaining there until two years ago, when he moved to Hutchinson.

During his long residence in Renville county, Dr. Clay took an active part in public affairs. He held the office of county coroner for twelve years and served as alderman in the city of Renville for several terms. He was a member of the board of health, a member of Camp Release Medical Association, the State Medical Association and the American Medical Association.

RESOLUTION OF CAMP RLEASE MEDICAL ASSOCIATION

WHEREAS, The Camp Release Medical Association has sustained a loss in the death of our colleague, Dr. E. M. Clay, one of the charter members of the society, who departed this life on November 4, 1927, at Olivia, Minnesota,

WHEREAS, he was one of the pioneer men of this society and always deeply interested in the society's welfare, and all those things that were for the betterment of the profession,

THEREFORE, BE IT RESOLVED, that we, the members of the Camp Release Medical Association, express our appreciation for the years of devoted service and fellowship and extend to the saddened family the sympathy of the society.

RESOLVED, that a copy of the Resolution be embodied in the minutes of our society, and that a copy be sent to the family as a tribute in memory of our colleague.

G. H. Mesker,
R. C. Adams,
E. C. Gaines,
Committee.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNEAPOLIS SURGICAL SOCIETY

The Minneapolis Surgical Society will meet in December at the home of Dr. Kenneth Bulkley. The following papers will be read:

1. "Bilateral Nephrolithiasis, An Unusual Case," Dr. Martin Nordland.
2. "Inguinal Hernia," Dr. Stanley R. Maxeiner.

At the November meeting of the Society, held at the home of the President, Dr. H. B. Sweetser, a paper was read by Dr. R. E. Farr on "A Simple Aseptic Hemostatic Method of Inverting the Appendix Stump."

CAMP RELEASE DISTRICT MEDICAL SOCIETY

The annual meeting of the Camp Release District Medical Society was held in Olivia, Minn., Thursday, October 13, 1927, with President Dr. A. A. Passer, of Olivia, presiding. About thirty-five physicians were in attendance.

Dr. Rood Taylor, Minneapolis, held a Pediatric Clinic, and presented a paper on "Jaundice in Infants and Children."

Dr. Chas. N. Hensel, St. Paul, held a Cardiac Clinic, and gave three case histories of asthma, with illustrated skin test results.

Dr. W. F. Braasch, president of Minnesota State Medical Association, addressed the society on "Renal Lithiasis," its diagnosis and treatment, and followed this by a splendid résumé of the activities of the state organization for the year.

Dr. R. C. Adams, of Bird Island, presented his theme on "The Management of the County Indigent" in a very helpful manner.

A vote of thanks was tendered the distinguished visitors for their valuable contributions to the program.

A business session followed, and the former officers were re-elected as follows: Dr. A. A. Passer, of Olivia, president; Dr. M. A. Burns, of Milan, vice president; Dr. L. J. Holmberg, of Canby, secretary-treasurer.

A resolution presented by Dr. Crandall, of Madison, expressing the sincere appreciation of the society, for the effort made by Dr. Comstock, of St. Paul, in attending and giving advice during the trial of "Dr.

Kanawana" of Bellingham, for practicing without a license, was adopted and ordered spread upon the minutes, and a copy sent to Doctor Comstock.

The business session was enlivened by the presence and admonitions of the chairman of the state legislative committee, Dr. H. M. Johnson, of Dawson.

Following the business session, President and Mrs. Passer acted as hosts at a bountiful repast at their home. Mrs. Lauermann, of Olivia, entertained during the dinner, with several delightful violin selections.

LYON-LINCOLN COUNTY MEDICAL SOCIETY

At a meeting of the Lyon-Lincoln County Society held October 11, the following officers were elected:

F. D. Gray, Marshall, president;

E. Engh, Cottonwood, vice-president;

H. M. Workman, Tracy, secretary and treasurer;

E. T. Sanderson, Minnesota, delegate; A. L. Vadheim, Tyler, alternate;

W. H. Valentine, Tracy, censor for three years.

ST. LOUIS COUNTY MEDICAL SOCIETY

The following are the new officers of the St. Louis County Medical Society, who were elected Oct. 13, 1927:

President, Dr. J. R. Kuth, of Duluth;

First vice-president, Dr. R. D. Gardner, of Eveleth;

Second vice-president, Dr. D. E. Seashore, of Duluth;

Secretary and treasurer, Dr. F. J. Elias, of Duluth;

Delegate, Dr. F. Magney; alternate, Dr. O. Parker;

Censors, Drs. J. Robinson, Robt. Forbes, and M. Fischer.

WRIGHT COUNTY MEDICAL SOCIETY

At the annual meeting of the Wright County Medical Society held at Buffalo, Tuesday, Oct. 11, the following officers were elected for the coming year:

President, E. Klaveness, Monticello;

Vice-president, O. Peterson, Cokato;

Secretary-treasurer, J. J. Catlin, Buffalo;

Censor, V. Rosseau, Maple Lake;

Delegate, A. G. Moffatt, Howard Lake; alternate, B. Swezey, Buffalo.

The November meeting was held at Monticello, Tuesday, Nov. 15. The program was devoted to a symposium on cancer, followed by a banquet at 6 p. m.

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

The annual meeting of the West Central Minnesota Medical Society was held at Morris, Minn., Oct. 12, 1927, when the members of the society and their ladies were the guests of Drs. Caine, Cumming, Fitzgerald, Leuty and Ransom at a six o'clock dinner.

Dr. C. F. Ewing of Wheaton addressed the society on the topic of postgraduate work and medical economics. A general discussion followed.

Election of officers for the year 1928 resulted as follows: President, Dr. J. T. Leland, Herman; vice-president, Dr. L. M. Ransom, Hancock; secretary-treasurer, Dr. H. Linde, Cyrus.

Dr. C. F. Ewing, Wheaton, was elected delegate to state convention, and Dr. I. Oliver, Graceville, director for relief in disaster.

The ladies of the society organized an auxiliary at the home of Mrs. E. T. Fitzgerald.

OF GENERAL INTEREST

Dr. Chester Sturges, formerly of Buffalo, is now practicing at St. Paul, Nebraska.

A daughter was born to Dr. and Mrs. N. C. Ochsenhirt, Rochester, Minn., on October 2.

Dr. D. R. Heetderks, formerly of Rochester, Minn., is now located at Grand Rapids, Mich.

Dr. and Mrs. E. P. Hawkins, Montrose, left in October for Miami, Fla., where they will spend the winter.

Dr. J. W. Thompson, Jr., Rochester, Minn., has gone to St. Louis, Missouri, where he will locate. His address will be Beaumont Medical Building.

Dr. and Mrs. H. F. Helmholz, Rochester, Minn., sailed from Montreal, in October, for Europe. They will return the latter part of December.

Dr. N. C. Thimsen has moved from Blooming Prairie, Minn., to Saint Paul, where he has opened offices for the practice of medicine at 1342 Thomas Street.

The annual conference of the secretaries of the component medical societies of the State Medical Association will be held in Saint Paul, Saturday, January 14, 1928.

The Council of the State Medical Association has appointed the following standing committee on University Relations: C. B. Wright, W. F. Braasch, H. M. Johnson, C. C. Kennedy and H. M. Workman.

Dr. Verne G. Burden of Philadelphia, a former fellow on The Mayo Foundation, has been awarded the F. M. Kirby fellowship in surgery. This fellowship offers an opportunity for research with special reference to physiology, and a portion of the time is given to teaching.

At the November meeting of the Minnesota Academy of Medicine Dr. Hilding Berglund, chief of the medical department, University of Minnesota, was elected an honorary member; Dr. Owen W. Parker of Ely, associate member, and Dr. John S. Abbott, Saint Paul, active member.

Dr. Jacob Markowitz of Toronto has come to The Mayo Foundation as first assistant in the Division of Experimental Surgery and Pathology. He attended the University of Toronto, receiving the degrees of M.B. in 1923 and Ph.D. in 1926. He has been engaged in research and teaching in physiology and biochemistry in the University of Toronto.

Dr. Robert E. Fricke has become associated with the Mayo Clinic in the Section on Radium Therapy. He attended Johns Hopkins University, receiving the degrees of A.B. in 1916 and of M.D. in 1920. Since 1920 he has been associate in radium and x-ray therapy at the Howard A. Kelly Hospital in Baltimore.

The enrollment at the University of Minnesota this year at the end of the first week was 10,459, an in-

crease of almost 500 over the enrollment at the same time last year. Each college shows an increase except those of dentistry, pharmacy, law and education. For the second successive year agriculture shows a gain, implying farm prosperity. The enrollment in the school of medicine was 601.

President Coffman of the University of Minnesota recently announced that twelve professors had resigned this year and that some had given as their reason the failure of the University to provide a plan whereby they and their families would be provided for in old age. The same reason was given by some of those sought for the vacant professorships. The president advocates the adoption of some such plan as has been adopted by many of the leading universities of the country.

The Council of the Minnesota State Medical Association at its last meeting decided not to have a scientific program next year, but only a meeting of the House of Delegates on Monday of the American Medical Association convention week in Minneapolis. As the American Medical Association will have an excellent scientific program it was thought best not to attempt one. The Council will meet on Sunday preceding the House of Delegates meeting. The Council also instructed the incoming president to appoint a Historical Committee to "gather data concerning the history of the Minnesota State Medical Association."

The second annual get-together meeting of the Buena Vista sanatorium board and the medical society of Wabasha county was held at the sanatorium at Wabasha Wednesday evening, Oct. 26. The event was sponsored by the sanatorium commission and the Wabasha County Medical Society. The guests included physicians of the two counties and past and present members of the sanatorium commission. Dr. W. J. Cochrane acted as toastmaster at the program of addresses and informal talks given following the dinner. The principal addresses of the evening were by Dr. C. A. Stewart, member of the faculty at the University of Minnesota, and by Dr. W. V. Lindsay, Winona health officer.

Work will be started in the spring on a three-unit addition to the University hospital to cost $890,000, it has been announced.

The expansion is in line with a program for hospitalization and housing of crippled children under medical school supervision as provided for in the $2,000,000 gift of William Henry Eustis. There will be $250,000 of this gift utilized to help defray the new addition's cost.

Besides the Eustis hospitalization unit, the new addition will include the student health service and outpatient or dispensary units. It will be built as a west wing paralleling the cancer institute and the eye, ear, nose and throat clinic on the east side.

A $28,000 roofhouse over the front part to house hospital internes will be one of the addition's features. At present the university dispensary is housed in cramped quarters in Millard hall basement, three blocks away from the hospital.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

DePree Company

Sulpharsphenamine-DePree in 0.1, 0.15, 0.2, 0.3, 0.4, 0.45, 0.6, 1.0, 3.0, Gm. Ampules.

Gilliland Laboratories, Inc.

Typhoid Vaccine, 30 Ampule package.

Eli Lilly & Co.

Ephedrine-Lilly

Inhalant Ephedrine Compound-Lilly

Parke, Davis & Co.

Erysipelas Streptococcus Antitoxin (Refined and Concentrated)-P.D. & Co.

E. R. Squibb & Sons

Scarlet Fever Streptococcus Toxin-Squibb, 5 vial package (500, 2,000, 8,000, 25,000, 60,000 skin test doses)

Scarlet Fever Streptococcus Toxin-Squibb, 50 vial package (500, 2,000, 8,000, 25,000, 60,000 skin test doses)

Winthrop Chemical Co.

Mesurol

Emulsion Mesurol, 20 per cent

Non-proprietary Articles

Ephedrine (base)

TRUTH ABOUT MEDICINES

Diphtheria Toxin-Antitoxin Mixture, 0.1 L+ (New and Non-official Remedies, 1927, p. 341).—This product is also marketed in packages of 30 bulbs, each containing 1 c.c., representing ten immunizing treatments. Parke, Davis & Co., Detroit. (Jour. A. M. A., October 1, 1927, p. 1151.)

Bromural.—2-monobromisovalerylurea, obtained by the interaction of urea with bromisovaleryl bromide. Bromural is a nerve sedative which produces sleep in mild cases of insomnia without markedly affecting the circulation or respiration. It is claimed to be useful as a nerve sedative and for the purpose of inducing sleep in functional nervous disease. Bromural is not effective in cases of insomnia associated with pain, cough, angina pectoris or delirium. It is supplied in substance and in five grain tablets. E. Bilhuber, Inc., New York. (Jour. A. M. A., October 8, 1927, p. 1251.)

Erysipelas Streptococcus Antitoxin Refined and Concentrated-P. D. & Co.—An erysipelas streptococcus antitoxin (New and Non-official Remedies, 1927, p. 337) prepared by immunizing horses with cultures of streptococcus isolated from erysipelas. The potency of the product is declared in "units," a unit representing the amount of antitoxin required to neutralize one skin test dose of toxin. It is marketed in packages of one piston syringe containing 500,000 units. Parke, Davis & Co., Detroit. (Jour. A. M. A., October 15, 1927, p. 1335.)

CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

CONGENITAL DIAPHRAGMATIC HERNIA

REPORT OF CASE

G. P. Dunne, M.D.
Saint Paul

Necropsy should be performed in all cases of neonatal death, especially in those of spontaneous deliveries. By so doing, the obstetrician will, in many cases, avoid unjust criticism.

The comparative rarity of congenital diaphragmatic hernia, and the failure in diagnosis before death, is sufficient ground for reporting the following case.

Mrs. M. H., aged 17, a white primipara, was admitted to the hospital March 20, 1926, in actual labor, and with membranes ruptured.

Her family history was unimportant.

She had had pertussis, chicken pox, jaundice and influenza.

Her menses began at twelve years of age, and came irregularly from 28 to 40 days apart, with pain during the second and third day. The last period had been July 14, 1925, and the estimated date of confinement April 12, 1926.

Physical Examination.—Temperature 98.2, pulse 80, B. P. 106/70. A well developed and well nourished, white female. Head, neck, nose, throat, lungs, heart, G. I. and G. U. systems negative.

Fundus; Four fingers' breadth above the umbilicus.

Presentation: longitudinal vertex. Position L. O. A. Fetal heart 120 L. L. Q. Measurements: I. S. 24, I. C. 26, Troch 31, E. C. 20, T. O. 8.5.

After a labor of 13 hours and 10 minutes (first stage, 11 hours; second stage, 2 hours and 10 minutes), she delivered, spontaneously, a premature (36 weeks) male, cyanotic child.

Following delivery, the child took a few shallow gasps. Examination of chest showed the heart markedly displaced to the left. The right side of the chest appeared more prominent than the left and the percussion note was tympanitic. Breath sounds could not be heard any place over the chest. No gurgling was audible.

A diagnosis of atelectasis was made. Artificial respiration, tubbing, and adrenalin retained life for 67 minutes after birth.

Necropsy Report.—The subject is a well developed, small, slightly premature male child, showing marked lividity over the entire body. No edema or jaundice present, and no marks on the body.

Peritoneal Cavity.—The abdomen is practically empty. The sigmoid and descending colon extend from the right of the diaphragm down into the pelvis, but no other part of the intestine is visible. The entire posterior right half of the diaphragm is entirely absent and through this opening the colon passes.

Pleural Cavities.—These show no fluid nor adhesions, but the right cavity is entirely filled with intestines. The appendix is visible on the right side just above the diaphragm; the left cavity is entirely obliterated by the pressure from the distended right cavity.

The heart is normal in size and shape, but pressed over against the left distal wall by the intestinal mass in the right cavity. There are a few drops of fluid in the pericardium. Nothing of interest is found in the heart itself.

Lungs: Both lungs are very small and dark red in color. Gross section shows them to contain a very small amount of air in a few areas, but for the greater part they are solid and heavy and have never been distended.

The spleen and liver are normal and the gastro-intestinal tract normal except for its unusual position.

The adrenals, kidneys and pelvic organs were not examined.

Diagnosis:

1. Congenital diaphragmatic hernia.
2. Intestines in right pleural cavity.

619 Hamm Building.

COMPOUND DISLOCATION FRACTURE OF DISTAL PHALANX OF FINGER

REPORT OF CASE

L. R. Boies, M.A., M.D.
Minneapolis

A professional baseball catcher received a foul tip on the end of the middle finger of his throwing hand, splitting the nail transversely just distal to the matrix, with a fracture of the distal phalanx just beyond the attachment of the extensor digitorum communis tendon. The fracture line extended into the joint (Fig. 1) and the lateral ligaments of the joint were torn about half way toward the palmar surface on each side; the joint was thus exposed and open.

Both the index finger and the fourth finger on the same hand presented the picture of "mallet finger" from previous injuries. Loss of function through stiffness in the joint, or loss of extensor power in the present injury, would seriously impair his throwing ability, thus affecting his future livelihood as a baseball player, and in addition cause considerable financial loss to the club owning him.

Treatment: First aid treatment consisted in the free application of two per cent mercurochrome to the wound.

Fig. 1. Anterior-posterior and lateral plates made before reduction of the compound dislocation fracture of the distal phalanx of the middle finger of the right hand.

About one hour after the injury, the player reported for surgical attention. The finger and the adjacent hand were carefully cleansed with benzine and then ether, followed by further preparation with Scott's solution of mercurochrome. Under block anesthesia with 1 per cent novocaine and aseptic technic, after the application of a rubber tourniquet to the base of the finger, the torn proximal half of the nail was removed, not disturbing the matrix and leaving the distal half of the nail, which was attached. A careful debridement operation of the ragged edges of the wound was performed, care being taken to identify the separated ends of the extensor digitorum communis tendon and attached bone. The exposed joint cavity was then repeatedly flushed with warm normal sterile saline and the flushing was repeated using a solution of 2 per cent mercurochrome.

Gentle traction on the distal phalanx combined with

Fig. 2. Anterior-posterior and lateral plates of the same finger after reduction. The lateral view shows the splint in place for maintaining hyperextension to keep the reduced fracture in position and release tension on the extensor digitorum communis tendon.

medial and palmar pressure to the distal phalanx reduced the dislocation and the fracture (Fig. 2).

A splint extending from the middle of the palm beyond the end of the injured phalanx was padded so as to place the finger in hyperextension, especially of the distal phalangeal joint. A second palmar splint was applied to place the wrist in dorsiflexion with the purpose of avoiding all tension possible on the extensor digitorum communis tendon on the base of the distal phalanx.

After-care: Dressings were changed daily during the first week; the surface of the wound was cleansed with alcohol, followed by the application of 2 per cent mercurochrome. The wound had sealed over by the fourth day, with no evidence of infection. The palmar splint on the wrist was removed on the eighth day, the splint to the finger on the tenth day. Hydrotherapy in the form of warm hand baths for twenty minutes three times daily was then started. A small protective splint from a tongue blade was placed on the palmar surface of the finger. Further splinting was discontinued on the twelfth day and active and passive motion started with continuation of the water baths. The patient began to handle a base ball and to throw carefully on the eighteenth day. Gradual increase in the amount of use of the finger continued until the thirty-fifth day, when he returned to the game. At this time he experienced only occasional soreness in the tip of the finger and as there were no signs of nail regeneration yet, the area from which the nail had been removed was slightly tender. The injury, however, seemed not to have in any way caused any loss of playing ability, and incidentally on the following day after his return to the game he was able to equal the existing world's record of three home runs in a single game. Examination two weeks later revealed regenerating nail. The range of active motion in the injured joint measured approximately thirty-five degrees as compared with the normal range of active motion, which is about forty-five degrees. Use of his extensor tendon as affecting the distal phalanx had not been impaired. Full normal range of motion will probably be regained in time.

Comment: The results obtained with the treatment in this case would indicate that:

1. The operation of debridement as developed for large wounds in the World War should be practiced in small wounds of this type where maximum recovery of function is desired.

2. Mercurochrome in 2 per cent solution is a useful antiseptic for joint cavities.

3. The principle of completely releasing tension on the tendinous attachments, as effected in this case by maintaining hyperextension with splints, insures the greater possibility of regaining healing in proper position of the detached tendons for the recovery of function.

4. Early motion as advocated by Wilhelmj insures greater probability of recovery of function.

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

THE STATUS OF ENTEROSTOMY IN THE TREATMENT OF ACUTE ILEUS: E. T. VanBuren and B. C. Smith (Archives of Surgery, August, 1927, XV, 288-297). Enterostomy has long been considered a life saving procedure in acute ileus, especially high jejunostomy. Certain facts have caused these recommendations to be questioned. The authors have found a high mortality rate in their series of cases with enterostomy. They have not found incontrovertible proof that enterostomy has lowered the mortality rate in cases of acute ileus.

From their table the average mortality rate for patients with acute ileus on whom enterostomy has been performed is 19% higher than that for the entire series.

In Gibson's series of 1,000 cases (1900) the mortality rate of the enterostomy group was 26% higher than that of the non-enterostomy group; in the author's series of 1,089 cases, 28% higher. In Gibson's series, enterostomy was performed in 19% of the cases and in the author's series, 32% of cases. The operation has been reserved for the cases in which the patient is the sickest. The authors have considered the fact that it would be fallacious to compare the mortality rate of the entire enterostomy group with that of the entire non-enterostomy group in any series until it is determined whether each comprises the same percentage of late cases as does the other. The mortality rate depends primarily upon the time at which the operation is performed rather than the type of operation. They have compared the late enterostomy group against the late non-enterostomy group (72 plus hours) and find the former much higher: 60% mortality for the enterostomy group and 47.8% for the non-enterostomy group.

A poor choice of cases and additional shock due to added surgical procedure, such as exploration, may account for the higher mortality rate. In cases with advanced ileus a lethal dose of poison has been absorbed and it is useless to expect the condition of the patient to improve after enterostomy. Surgical shock is added to fatal chemical poisoning. The primary object of enterostomy is to secure drainage. If enterostomy is done in time but drainage not secured, the procedure is without value.

It appears that enterostomy has had little influence on the general mortality rate of all cases in a series, but there is some evidence that the mortality has been lowered by this procedure. Early and late cases must be considered and it must be used in a larger percentage of total number of cases in a series, and more often as a primary step to further treatment.

The actual value of the procedure must be established by statistical proof. Statistics up to the present time do not afford a suitable comparison. Coöperation of those interested in acute ileus, in tabulating their data as to late and early cases, both with and without enterostomy, so that a favorable comparison could be made, would help greatly in establishing the true value of enterostomy in acute ileus.

Lloyd T. Sussex, M.D.

TREATMENT OF POSTOPERATIVE SUPPURATIVE PAROTIDITIS: W. H. Fisher (Ann. of Surg., Vol. LXXXVI, 445). The author calls attention to a previous article in which he classified postoperative infective parotiditis into three types: (1) acute parotiditis or simple inflammation; (2) acute suppurative parotiditis; and (3) gangrenous parotiditis. In the previous article he drew the following conclusions:

1. Every case is a potential lethal factor until it proves itself benign.
2. To await spontaneous evolution is jeopardizing life.
3. Differential diagnosis of types suggests the method of relief, medical or surgical.
4. When surgical, operate early, with free incision and open drainage.

The author gives four case reports in which daily injections of 5 c.c. of mercurochrome intravenously were given from the onset. The process is usually a staphylococcus infection and mercurochrome frequently aborts the process entirely or greatly modifies its severity. If, after the second or third injection of mercurochrome, there is no improvement, the case assumes surgical aspects. The gangrenous types are usually fatal.

Paul G. Flothow, M.D.

RECURRENT MULTIPLE OSTEOMYELITIS DUE TO STAPHYLOCOCCUS AUREUS: R. Mc. E. Schauffler (Jour. Bone and Joint Surg., 1927, IX, 740-747). The author describes a type of osteomyelitis characterized by remissions and exacerbations. The disease usually begins in an acute form in childhood and may last to late adolescence or longer. Several severe lesions appear in rapid succession and usually involve the femora, humeri or tibiæ.

The cancellous bone of the upper tibia or upper femur usually constitutes the long persistent focus of infection from which the later periosteal and deep fascial infections have their origin. The acuteness of the process varies in different cases.

Twenty cases of multiple osteomyelitis are reported, seven of the severe type with wide-spread lesions and many abscesses. Thirteen had two or more widely separated bone lesions and were characterized by chronicity and recurrence with occasionally a periosteal or fascial abscess. The organism present is usually staphylococcus.

Harold E. Simon, M.D.

LIGATION OF THE FEMORAL ARTERY BELOW THE ORIGIN OF THE PROFUNDA FEMORIS IN THE TREATMENT OF OBLITERATIVE ENDARTERITIS OF THE LEG: T. E. Neill (Ann. Surg., Vol. LXXXVI, 425). Neill points out the fact that the question of whether or not tissue death takes place in a limb affected by obliterative endarteritis depends entirely upon the formation of collateral circulation. The process of the endarteritis which plugs the vessels is a slow one as is also the establishment of collateral circulation. If the latter process is the more rapid, death of tissue or gangrene does not take place.

The surgeon usually sees the disease late in its course when gangrene is already present and amputation is indicated.

Lewis and Reichert introduced ligation of the femoral artery in this condition, reasoning that it would both inhibit the rate of occlusion of vessels and stimulate the development of collateral circulation. The femoral artery is ligated just proximal to Hunter's canal. Very good results have been obtained and patients have been saved from amputation. A case report is included.

Paul G. Flothow, M.D.

MOVABLE BULLETS IN THE SPINAL CANAL: Leo P. Bell (Jour. Bone and Joint Surg., 1927, IX, 639-647). Trauma to the spinal cord, resulting from a bullet wound, is rare in civil life. The immediate mortality and end-results depend upon the location of the injury, the amount of trauma to the cord, the extent of intra- and extra-thecal hemorrhage, the length of time elapsing before laminectomy is done for relief of pressure on the cord, the amount of infection present, and the injury to structures of the body other than the cord.

Bullet wounds in the cervical region cause a much higher mortality and result in many more complications than do wounds in the lumbar region.

As soon as shock has passed, laminectomy should be done to prevent pressure destruction of the cord and to allow relief of tension by swelling and edema. When a bullet is allowed to remain in the canal for a long

time, it becomes surrounded by organized blood clots, which may result in pressure disturbance to the filaments of the cauda equina.

It would seem that all bullets entering the dural sheath in the lumbar region are movable, or potentially so, until they become stationary from inflammatory reaction and fibrosis, which probably requires four or five months.

To guard against errors in localization due to movements of the bullet, the author suggests that stereoscopic *x*-ray pictures should be made just before placing the patient on the operating table; that there should be the least possible movement of the patient's body after roentgenological localization; that local anesthesia should be used, and that the head of the table should not be elevated to allow the bullet to gravitate into the operative field because that may lead to an extensive and serious loss of cerebrospinal fluid.

HAROLD E. SIMON, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

THE THERAPEUTICS OF THE CARDIAC CHILD: J. Epstein, M.D. (Arch. of Ped., Sept., 1927). Heart disease in early childhood is usually congenital. Acquired heart disease during the first two or three years of life is mainly due to septic infection.

Insufficient wholesome food, scanty clothing, unhygienic care, cold and damp dwellings, exposure to bad weather and poverty in all its ramifications lay the foundation for heart disease. Complete physical and mental rest will relieve the heart of a great deal of its extra work. Prolonged rest in bed will favor restitution of the heart to its normal condition. It will reduce inflammation, the number of heart beats, and the constant pounding of the blood against the diseased valves during cardiac contraction. There is no need for digitalis in the acute stage with perfect compensation. An ice bag to the precordium, salicylates and codeine form the necessary first aid therapeutics. After the child has received a thorough course of salicylates, guaiacol carbonate and quinine should be given. With the subsidence of the fever and the improvement of the symptoms, calcium salts, especially calcium glycerophosphate, iron citrate or carbonate and arsenic, are indicated.

R. N. ANDREWS, M.D.

INFANTILE ECZEMA—A PHYSICAL OR COLD WEATHER ALLERGY: M. S. Picard, M.D. (Arch. of Pediatrics, Sept., 1927). Seasonal appearance of eczema is a definite phenomenon. Pediatrists believe it to be some manifestation of food irritation such as faulty fat metabolism, as in Czerny's exudative diathesis, or protein irritation, as in Schloss' outstanding work on food allergy. The idea was confirmed that the transmission of foreign proteid through the milk produces eczema in the suckling. O'Keefe, in a study of 45 cases of eczema in the breast-fed child, found 17 cases showing a reaction to one or more of the egg proteins. Six showed a reaction to cow's milk. The author does not believe this can fully explain the predominance of eczema in the breast-fed child. In mother's milk we reach the millennium of nutritional perfection, a perfect food, specially prepared by nature, true to its own species, yet in breast-fed children are found the most stubborn and intractable cases of eczema.

If we take a child off breast milk and put it on cow's milk, the eczema persists. The author is convinced that food allergy is of minor importance only and that the real cause must be sought in some other sphere. He believes cold weather allergy is the most important factor. Sensitiveness to cold does not develop with the first appearance of winter. A certain time is necessary for this sensitiveness to appear, in a sense comparable to serum reactions, but, once established, it is constant, only to be relieved by warm weather.

Like all other allergies, the susceptibility to cold is not permanent. The great majority of children lose their susceptibility the second winter, the succeeding winter shows fewer cases and very few carry symptoms into the fourth winter. Fully 80 per cent fail to recur the second winter.

The mask smeared with zinc oxide ointment or tar ointment is a mechanical protection from cold. It gives the same protection that long distance swimmers get by smearing their bodies with a heavy coating of grease.

R. N. ANDREWS, M.D.

ASTHMOLYSIN

Asthmolysin is, according to the advertising, "a combination of the suprarenal and pituitary hormones in distinct proportions," prepared by a "special method." There appears to be no scientific evidence to warrant the use of pituitary in bronchial asthma. Epinephrine is frequently used in some forms of asthma, but may be had pure and need not be prescribed in a secret preparation containing an undetermined amount. The 1927 Asthmolysin circular consists of testimonials from 121 physicians, of whom thirty-five are Fellows and thirty-three are neither members nor Fellows. Such testimonials, given for a semi-secret preparation of unscientific character, are no credit to those members of the supposedly learned profession that gave them. (Jour. A. M. A., October 1, 1927, p. 1170.)

ROENTGENOLOGY

SUPERVISORS:
LEO G. RIGLER,
MPLS. GEN'L HOSPITAL, MINNEAPOLIS
A. U. DESJARDINS,
MAYO CLINIC, ROCHESTER

A CASE OF "IVORY BONE VERTEBRA" (Marble-bone?) in Lympho-Granulomatosis: O. Hultén (Acta Radiologica, Vol. VIII, p. 252, July, 1927). A case of lymphyogranulomatosis is described in which marked changes in the vertebræ were found. A destructive process in several of the dorsal vertebræ was found on roentgen examination with compression of one of them. On microscopic examination after autopsy, these were found infiltrated with lymphoid tissue with marked atrophy of the bone. In one of the lumbar vertebræ, on the other hand, a productive process was found, the body being extremely dense, rescmbling an "Elfenbeinwirbel" (probably "marble-bones" or osteosclerosis). This vertebra on microscopic examination showed increase in bone substance and calcium resembling closely the picture seen in osteoblastic carcinoma metastasis of slow growing type. This type of bone change associated with Hodgkin's disease has not been heretofore reported.

The author believes that the increased density and the bone sclerosis seen in this case, as well as in the slow growing metastasis from carcinoma of the prostate or breast, is due to a healing tendency which these tumors have. He advises more routine roentgen examinations of the skeleton in cases of Hodgkin's discase.

LEO G. RIGLER, M.D.

ANNULAR SHADOWS IN THE LUNGS CAUSED BY SUBPLEURAL EMPHYSEMA: S. Arnell (Acta Radiologica, Vol. VIII, p. 252, July, 1927). The author reports here a case of prolonged asthma showing numerous large and small annular shadows in the lungs on roentgenologic examination. These were of such a character as to simulate tuberculous cavities if they had been located in the upper lobes. On post mortem examination, they were found to be due to subpleural and interstitial emphysema and to blebs in the pleural sac. The case is of interest as it substantiates with autopsy proof the statements of Miller and others that this may be one of the causes of annular shadows.

LEO G. RIGLER, M.D.

TWO CASES OF HODGKIN'S DISEASE WITH BONE DESTRUCTION: S. Arnell (Acta Radiologica, Vol. VIII, p. 259, July, 1927). The author describes two cases of Hodgkin's disease, in one of which the sternum and in the other several ribs and the bodies of several vertebræ showed evidence of infiltration on rocntgen examination. There was bone destruction and also some periosteal new bone production. The author believes it is virtually impossible to distinguish the roentgen picture of Hodgkin's infiltration in bone from carcinomatous metastasis to bone.

LEO G. RIGLER, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:
VIRGIL J. SCHWARTZ,
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E. L. ARMSTRONG,
FIDELITY BLDG., DULUTH

RADIUM IMPLANTATION IN ESOPHAGEAL CANCER: Joseph Muir (Laryngoscope, 37: 660, September 1927). Cancer of the esophagus is generally regarded as the most hopelessly incurable of malignant lesions. None of the forms of treatment which have proved successful in combating cancer elsewhere in the body have heretofore been possible of application to the esophagus. Radium has been even less beneficial than surgery. Three prime drawbacks to this use of radium have always existed; first, the difficulty of placing it accurately; second, the practical impossibility of maintaining it in position long enough to be effectual, and third, the great danger of burning the tissues, which will induce sloughing and fistula into the mediastinum—invariably a fatal accident.

To obviate these difficulties the author has elaborated a technic of radium implantation through a specially designed esophagoscope which can be readily carried out by anyone experienced in the use of this type of instrument. The field of operation is illuminated and an implanter passed through the tube, so that each radon seed may be placed in full view, and the entire lesion accurately mapped out and evenly implanted. The radioactive center employed is a removable platinum radon seed, which offers the double advantage of being so screened that it will not induce necrosis, and the possibility of removal by means of an attached thread so that no foreign bodies are left in the tissue after the contained radium emanation has entirely decayed. The entire procedure is facilitated if done under the fluoroscope, though this is not absolutely essential.

The results in the small series of cases so far treated by this method have been highly gratifying, and although no permanent results can be reported before the lapse of five years, the author feels that the method merits a wide trial, even if it proves to do no more than prolong lives which otherwise will be very shortly terminated.

PEDIATRIC ASPECTS OF OTOLARYNGOLOGY: McKimm Marriott, M.D., St. Louis, Missouri (Annals of Otology, Rhinology and Laryngology, September, 1927, pages 686-692). Many important conditions in children and infants are primarily results of infections, processes of ears, nose and throat.

Pain-headache, purulent nasal discharge may not be present in diseased sinuses and the sinusitis is found only by careful search. Mastoiditis with pain, fever, redness and swelling is easily diagnosed, but it may occur in infants with none of the classical signs.

An infant whose food is correct and still does not thrive, or who develops gastro-intestinal symptoms, is suffering from some infection and the food does not need to be altered.

The infection is verly likely to be in the ears or nose. Otitis media is the most frequent cause of gastro-intestinal disturbances. The drum may not even be red or bulging. There may be only a lack of lustre of the drum. Where the symptoms persist following a paracentesis the mastoid antrum is probably involved with swelling of mucosa, blocking off the antrum so that it cannot drain into the middle ear. Then the posterior superior canal wall will sag just external to the drum.

Antrotomy should be performed at that point, and will be followed by prompt relief of symptoms.

E. L. Armstrong, M.D.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

International Clinics, Edited by Henry W. Cattell, M.D. Vol. III. 37th Series, 1927. 311 pages. Illus. Philadelphia and London: J. B. Lippincott Co., 1927.

Modern Medicine. Sir William Osler, Bart., M.D., F.R.S. Re-edited by Thomas McCrae, M.D., and Elmer H. Funk, M.D. Vol. V. 948 pages. Illus. Philadelphia: Lea and Febiger, 1927.

American Medicine and the People's Health. Harry H. Moore, Public Health Economist, U. S. P. H. S. With an introduction by the Committee of Five. 647 pages. Illus. Cloth, $5.00. New York: D. Appleton and Company, 1927.

MANUAL OF NORMAL PHYSICAL SCIENCE. Wyndham B. Blanton, B.A., M.A., and M.D. Price $2.50. St. Louis: C. V. Mosby Company, 1927.

This is a true manual of physical science. It is written in outline form, orderly and interestingly arranged. The book presents a good brief review of normal anatomy and physiology, covering the essential features of the entire body. The book was assembled primarily for the use of students, but after reviewing its contents one is impressed that it is of great value to the men out in practice, because of its thoroughness and yet brevity. The author concludes his book with a chapter on the order of physical examination. This is an outline on procedure and is well done. He also warns "that a logical order should be rigidly adhered to," citing, "There is no surer road to errors of omission than indifference to this point." Experience bears this out. As a rule, it is not too careful examination, but rather the insufficient examination, that results in failure and regret. The book as a whole is well worth its price, for it leaves the physician better equipped to examine the patient.

A. E. Flagstad, M.D.

INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. Forty-Fifth Year. 560 pages, 81 plates, 77 illus. Cloth, $6.00. New York: William Wood and Company, 1927.

This is the Forty-fifth consecutive yearly volume of the *Medical Annual.* In this volume is a review of the year's work on the treatment of disease, attempting to give all that is new and approved in therapeutics. The articles are concise and clear and the material has been well chosen by the editors and contributors.

An attempt to write a review of any of the articles themselves would be futile as the volume is a ready refcrence for all branches of medicine and should be personally seen to be appreciated.

A. E. Cardle, M.D.

LECTURES ON INTERNAL MEDICINE. (Delivered in the United States in 1926.) Knud Faber, M.D., Professor of Internal Medicine, University of Copenhagen, Denmark. With 43 Figures and Charts. 147 pp. Cloth, $3.00. New York: Paul B. Hoeber, Inc., 1927.

This number contains four lectures given by Dr. Knud Faber, Professor of Internal Medicine, University of Copenhagen, Denmark, while on a visit to the United States.

The first is on the "Etiology and Pathogenesis of Achylia Gastrica," an excellent discussion of the various theories of achylia and a discussion of the results of his own investigations. Dr. Faber believes that there is nothing remarkable about the disease and that it is due to disease of the gastric mucous membrane with its extensive glandular apparatus, and that the natural term for the disease is "gastritis," an inflammatory disease of the gastric parenchyma.

The second paper, "The Intestinal Origin of Pernicious Anemia," is a discussion of the theories of pernicious anemia, giving his view of the theories and attempting to show that achylia gastrica (anacidity) is the most frequent but not the only cause of pernicious anemia and is associated with a continually recurring intestinal intoxication from protein toxins.

"Benign Glycosuria," the third article, is chiefly a discussion of blood sugar threshold with considerable ex-

perimental evidence to show that in the same individual it constantly maintains a definite position.

The fourth article is a paper of history called the "Historical Outline of Medical Therapy." It is very interesting and enjoyable to read.

A. E. Cardle, M.D.

DISEASES OF THE DIGESTIVE ORGANS—DIAGNOSIS AND TREATMENT. Charles D. Aaron, M.D., Professor of Gastro-Enterology and Dietetics, Detroit College of Medicine and Surgery; Professor of Gastro-Enterology, Detroit Post-Graduate School of Medicine. Fourth Edition. 927 pages. Illustrated. Cloth, $11.00. Philadelphia: Lea & Febiger, 1927.

The fourth edition of this book is a thorough revision of this standard work. As the title indicates, the subject matter deals with diseases of the digestive tract and associated organs, with special attention to diagnosis and treatment. The newer methods of clinical and laboratory investigation have been included and the principles and details of technic accurately described. All well-recognized methods of treatment are considered and dietetic management carefully outlined. A special chapter is devoted to hydrotherapeutic measures. The chapters on Diseases of the Liver, Bile Ducts and Gallbladder have been entirely revised and brought up to date.

The book is well written, easily readable, profusely illustrated, and contains some excellent roentgenogram reproductions. It is not only of assistance to the gastro-enterologist but a good reference work for the internist, surgeon, and general practitioner.

Paul H. Rowe, M.D.

ELECTROTHERMIC METHODS IN NEOPLASTIC DISEASES. J. Douglas Morgan, B.A. and M.D. Price $2.50. Philadelphia: F. A. Davis Company, 1927.

The author confines his work to a study of electrothermic therapy. He briefly reviews the historical phase of the subject and defines various terms associated with electro-therapy. Chapter III is devoted to a consideration of surgical diathermy, history, terminology and usage. Chapter IV is devoted to apparatus. Chapters V and VI consider electrodesiccation and electrocoagulation, defining these terms and illustrating their usage with the type of cases applicable to each. Chapter VII considers the general summary of these methods. Chapter VIII considers tissue cutting by high frequency current.

The author brings together throughout his entire book a rather complete review of all current articles pertaining to this special field of medicine. According to Dr. Morgan there are definite conditions in which electrothermic methods have a distinct advantage over any other procedure. This book is well worth reading for it leaves one better equipped to proceed in an intelligent manner in this particular phase of electrotherapy.

A. E. Flagstad, M.D.

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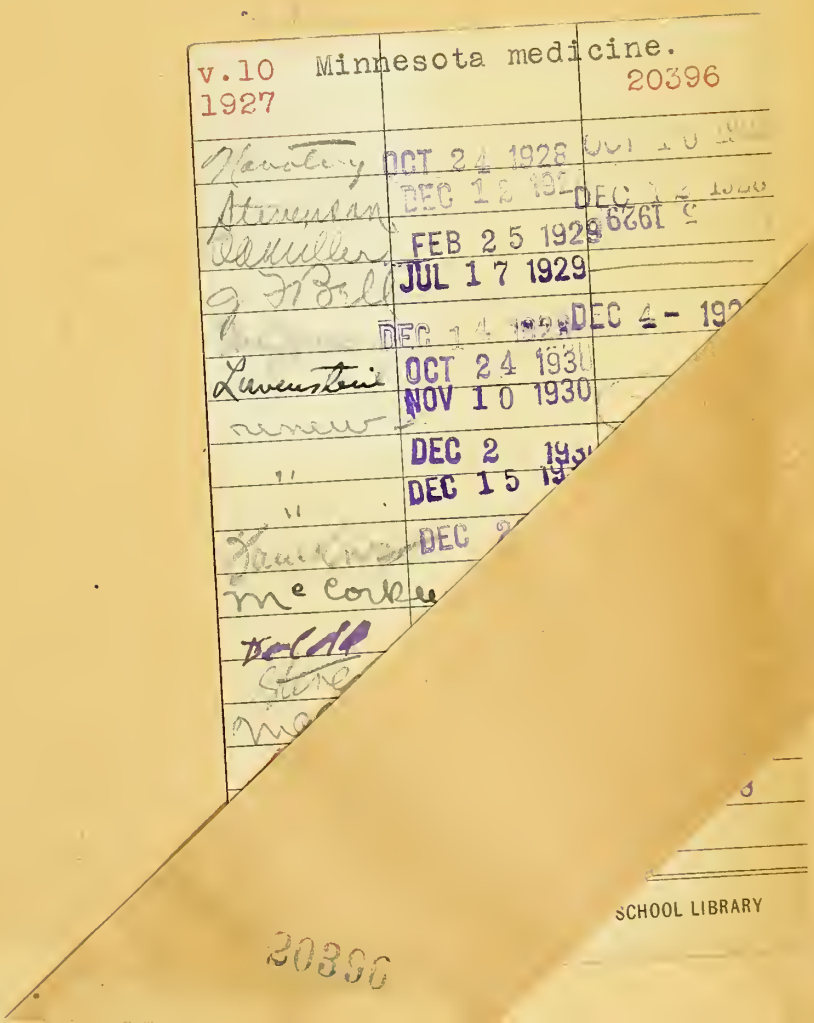
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